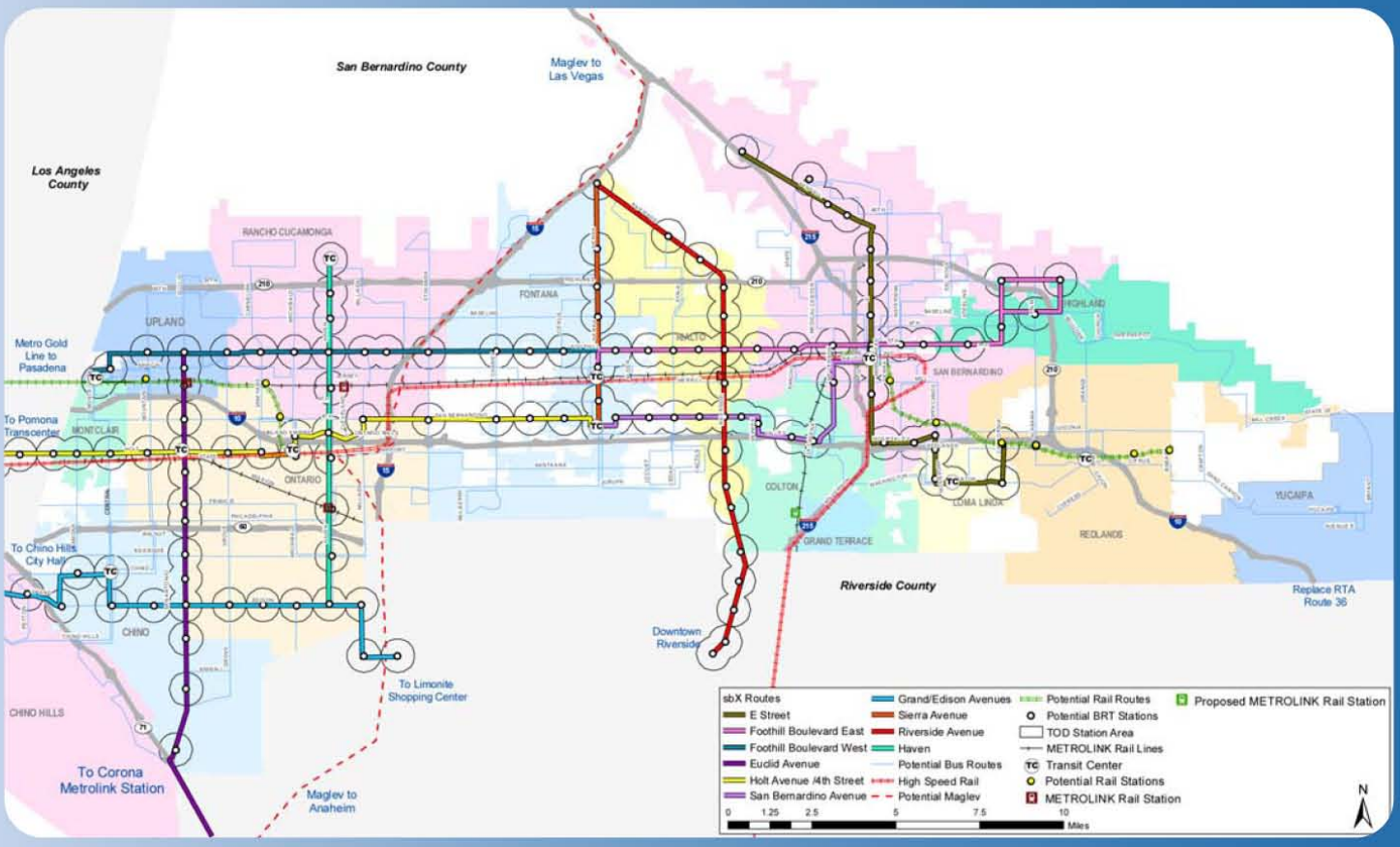
System-Wide Transit Corridor Plan for the San Bernardino Valley

sbX E Street Corridor BRT Project



Prepared for:
Omnitrans

Prepared by:

PARSONS

HEXAGON TRANSPORTATION CONSULTANTS, INC.

Patti Post & Associates

October 2010

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Executive Summary

In September 2004, Omnitrans, the transit service provider for the San Bernardino Valley, adopted the first System-Wide Plan, a key document in implementing a vision for the future of transit in the Valley. The 2004 version of the System-Wide Plan identified seven premium transit corridors with potential to develop into major fixed route transit investments. In the time since the previous report there have been numerous changes that required the update of the System-Wide Plan.

This version of the System-Wide Plan supports Omnitrans' ongoing efforts to develop the San Bernardino Express (sbX) network, a series of premium transit corridors, currently planned as Bus Rapid Transit (BRT) corridors.

The System-Wide Plan presents an introduction of the considerations reflected in this document, including the development of the sbX E Street BRT Corridor and the passage of Senate Bill 375 in November of 2008.

All of the potential corridors, identified in Exhibit ES-1, are then identified and potential alignments are given. The corridors are then analyzed based on existing conditions, i.e. land use patterns, ridership patterns, demographic patterns, as well as future conditions. The future conditions are based on the San Bernardino Valley Focused Travel Demand Model, which generates transit ridership forecasts.

Chapter 5 presents a comparison of the corridors based On Federal Transit Administration (FTA) New Starts/Small Starts Analysis, as well as corridors that promote:

- Sustainability
- Economic Development, and
- Increased Mobility.

The System-Wide plan gives priority to corridors that:

- Promote transit oriented development and transit signal priority (TSP)
- contribute to the project development process
- promote the goals of SB 375 and regional Growth Management policies

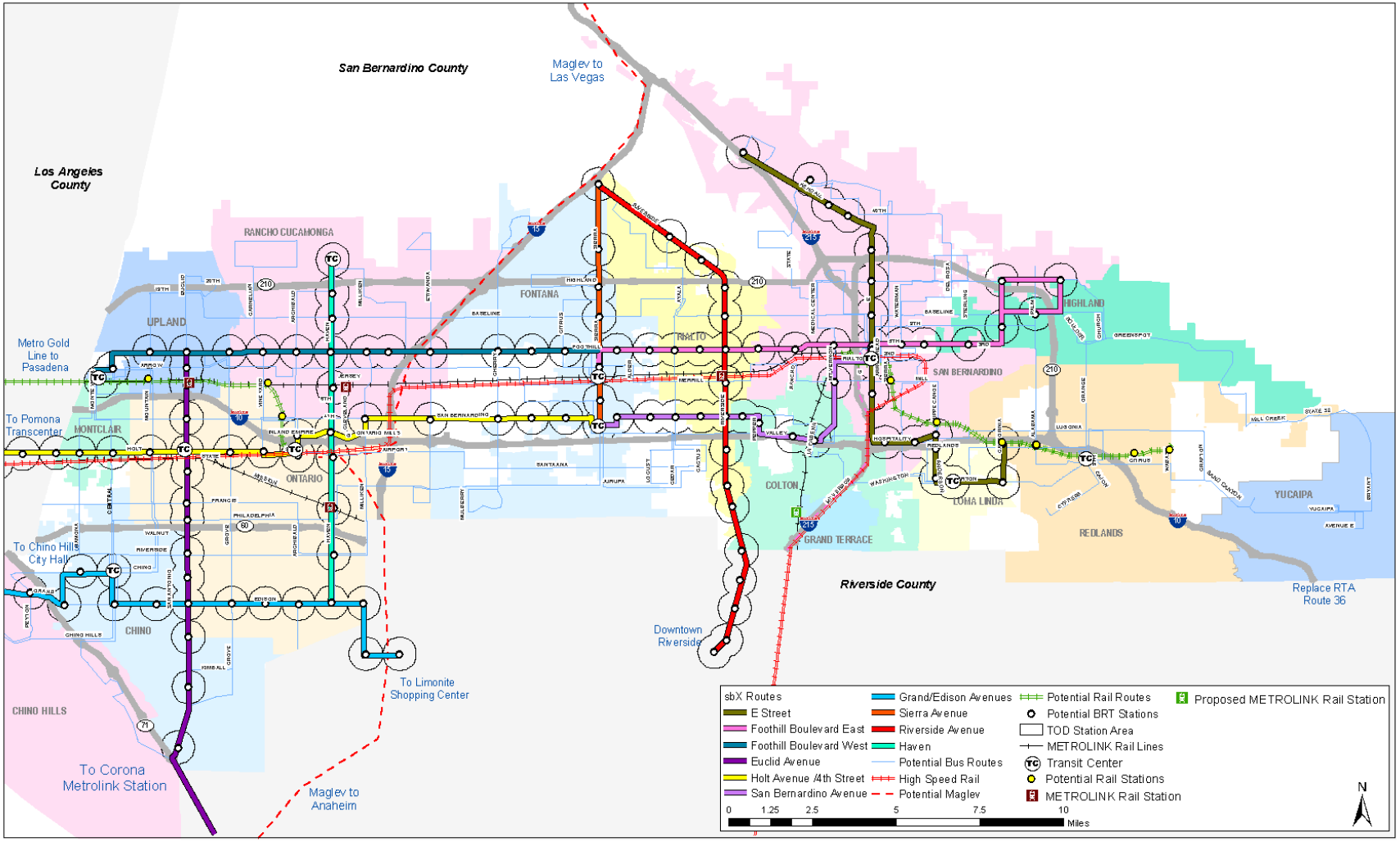
The corridors and evaluated and prioritized into Priority Corridors, Near Term Corridors, Mid term Corridors and Long Term Corridors. Table ES-1 presents the corridor prioritization and primary rationale for prioritization.

Due to the limited resources allocated to transit, Omnitrans is encouraging communities to identify opportunities to support transit and the sbX network, by planning for new development around station areas, and the ability to utilize federal, state and local resources to encourage these developments and in turn better transit service.

All ten of the major transit corridors in the San Bernardino Valley identified in this System-Wide Plan exhibit great potential for sbX services that:

- achieve speeds competitive with the automobile during peak commute periods;
- emphasize reliability due to the fact that they either travel in dedicated lanes/ways or have preferential treatment;
- have the shortest possible headways to guarantee short transfer wait times between routes/connecting corridors; and
- are attractive with well-designed vehicles and stations/stops that blend well into adjacent land uses and activity centers.

In conclusion, this System-Wide Transit Corridor Plan provides a solid basis for Omnitrans' ongoing development of premier transit corridors to serve the San Bernardino Valley over the next 25 years. The Corridors identified and analyzed in the plan are all corridors viable for development and Omnitrans will continue these efforts to develop these corridors through the FTA project development process and in coordination with local jurisdictions and other regional partners.



Omnitrans System-Wide Plan Map

Omnitrans System-Wide Transit Corridor Plan

Exhibit ES-1: System-Wide Plan Routes

Table ES-1: Recommended Phasing Plan for Major Transit Corridors

Corridor Ranking	Primary Rationale
Recommended Phasing Plan for Priority Implementation	
Corridor 1: E Street	Strong transit ridership potential, significant opportunity to influence redevelopment, significant new travel choices to disadvantaged, good system connectivity potential.
Corridor 2: Foothill East	Second best ridership potential, 73 percent growth projected in population and trip-making, good system connecting potential.
Corridor 5: San Bernardino Avenue	San Bernardino Avenue Corridor creates a southerly alignment for premium transit services, connections to the E Street Corridor, new travel choices for low income/disadvantages groups, moderate employment and population growth.
Recommended Phasing Plan for Near Term Implementation	
Corridor 3: Foothill West	High existing population and employment, good system connectivity potential to Los Angeles County Operators.
Corridor 6: Holt Avenue/4th Street	Third highest transit ridership potential, significant new travel choices for transit dependent, system connections to Los Angeles.
Recommended Phasing Plan for Mid Term Implementation	
Corridor 4: Euclid Avenue	Chino Transit Center Connections to Corona Metrolink Station could move higher on list if development of Agricultural Preserve accelerates and developers emphasize transit alignments as integral part of development phasing.
Corridor 9: Riverside Avenue	Connection into Downtown Riverside, opportunities to influence developments in northern portions of the Valley, good Cost Effectiveness rating.
Recommended Phasing Plan for Long Term Implementation	
Corridor 7: Grand/Edison Avenue	Good opportunities to influence new developments in Agricultural Preserves, good intercounty connections to Los Angeles County and SR 57.
Corridor 8: Sierra Avenue	Good system connectivity potential to other Corridors, opportunities to influence developments in northern portions of the Valley.
Corridor 10: Haven Avenue	Good opportunities to influence new developments in Agricultural Preserves, and around the Ontario airport. High growth in transit and low investment cost.

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Chapter 1 Introduction

In September 2004, Omnitrans, the transit service provider for the San Bernardino Valley, adopted the first System-Wide Plan, a key document in implementing a vision for the future of transit in the Valley. The 2004 version of the System-Wide Plan identified seven premium transit corridors with potential to develop into major fixed route transit investments. But by the year 2035, substantial changes will occur in the Valley in the form of population and employment growth, development and travel patterns, and additional transit service needs. With limited resources available for transit, this updated System-Wide Plan presents Omnitrans' latest strategy for addressing issues that currently exist in the transit network, and where opportunities will occur to expand and enhance transit service. The plan provides a vision for the future of transit over the next 25 years, by identifying and prioritizing premium transit corridors within the Omnitrans service area. The development of the System-Wide Plan reflects Omnitrans' key goals of:

- Sustainability
- Economic Development, and
- Increased Mobility.

The System-Wide Plan supports Omnitrans' ongoing efforts to develop the San Bernardino Express (sbX) network, a series of premium transit corridors currently planned as Bus Rapid Transit (BRT) corridors. This updated version of the plan also reflects new considerations, including:

- **SAFETEA-LU.** The federal transportation spending bill, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) signed in 2005, created the Federal Transit Administrations (FTA) New Starts and Small Starts programs, primary funding sources for transit systems.

- **E Street sbX**. First identified in the 2004 System-Wide Plan, the sbX E Street Corridor BRT project has successfully progressed through the FTA project development process and has shown Omnitrans' ability to plan and develop a world-class BRT system in the Valley. A Small Starts Project Construction Grant Agreement (PCGA) is expected from Congress in early 2010.

- **Omnitrans Strategic Plan.** This plan sets the direction Omnitrans will take over the years 2009-2014 in fulfilling its mission of providing the San Bernardino Valley with comprehensive mass public transportation services. The System-Wide Plan is one of the elements intended to meet the goals and objectives identified in Omnitrans' Strategic Plan.

- **San Bernardino County Long Range Transit Plan.** The 2004 System-Wide Plan identified seven BRT corridors in the Valley; San Bernardino Associated Governments (SANBAG) more recent *Long Range Transit Plan* identifies three additional corridors and provides additional technical resources and analysis to aid in determining the implementation schedule for the corridors.

- **California Senate Bill 375.** This bill, passed in November of 2008 by the California legislature, is a greenhouse gas reduction bill that integrates regional land use, housing and transportation to create sustainable communities, often in the form of Transit Oriented Developments (TODs) that promotes the reduction of Vehicle Miles Traveled (VMT).

- **San Bernardino Valley Focused Model.** The San Bernardino Valley Focused Model (SBVFM) is a travel demand forecasting tool derived from the Southern California Association of Governments (SCAG) regional model. The SBVFM is customized for an increased level of definition for the San Bernardino Valley.

The 2004 version of the System-Wide plan served to identify premium transit corridors with potential to develop into major fixed route transit investments. The updated version of the plan builds on those efforts and on the efforts of the San Bernardino County Long Range Transit Plan (LRTP) and serves to identify the next corridors

for development. Exhibit 1-1 presents a thematic representation of the sequence of planning steps used for the development of the plan.

1.1 SAFETEA-LU

The federal surface transportation authorization bill, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) provides transit funding for fixed guideway improvements under the New Starts program. The Federal Transit Administration (FTA) is directed under SAFTEA-LU to evaluate and rate potential New Starts projects for funding under Section 5309 of the Act. The New Starts program also contains funding for the Small Starts (maximum project cost $250 million) and Very Small Starts (maximum project cost $50 million) programs, providing funding for smaller projects and bus corridor improvements.

The New Starts/Small Starts evaluation process is based on two main criteria, project justification and local financial commitment. The ranking process considers the following main factors:

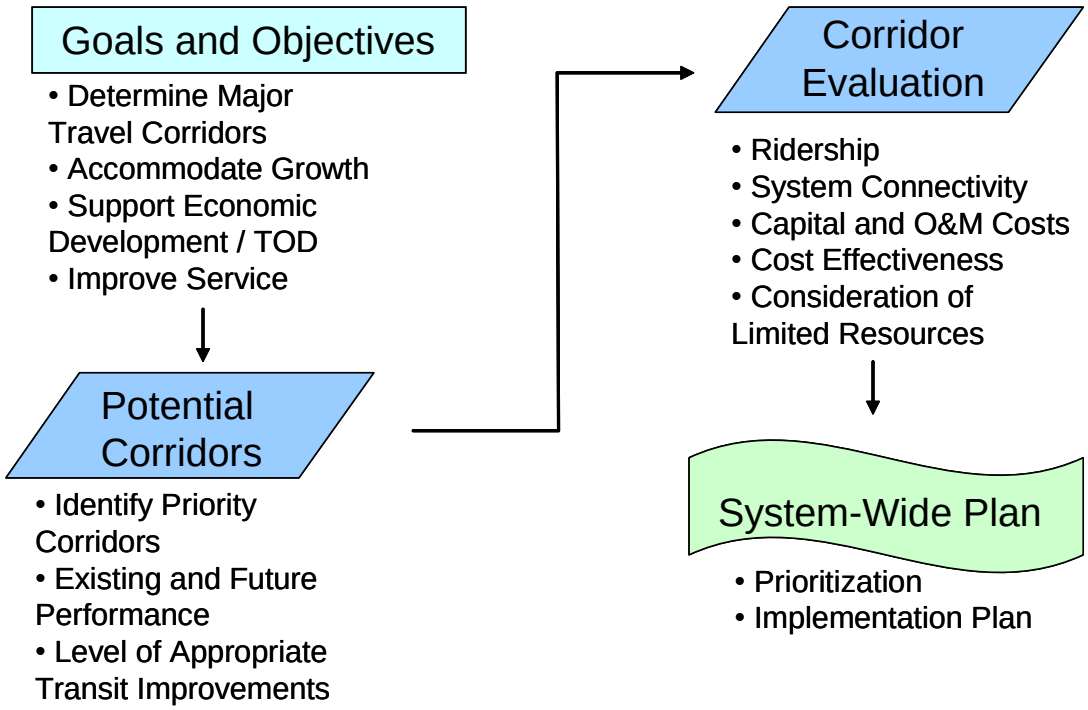
- **Project Justification**
  - Mobility Improvements;
  - Environmental Benefits (Not Ranked)
  - Cost Effectiveness
  - Transit Supportive Land Use Policies and Future Patterns
- **Local Financial Commitment**
  - Non Section 5309 (New Starts/Small Starts)Funding
  - Capital Finances
  - Operating Finances

The Federal New Starts/Small Starts funding process also includes an underutilized funding source, the Very Small Starts process that provides funding for improvements to corridors that can meet minimum requirements to ensure significant transportation benefits commensurate with a project's cost.

The BRT corridors presented in this document are also evaluated by the Very Small Starts process which rewards corridors with an automatic "Medium Rating" for FTA Very Small Starts if the corridors include:

- Substantial transit stations;
- Traffic signal priority/pre-emption, to the extent, if any, that there are traffic signals on the corridor;
- Low-floor vehicles or level boarding;
- "Branding" (distinguishing through marketing and physical characteristics) of the proposed service;
- 10 minute peak/15 minute off peak frequencies or better while operating at least 14 hours per weekday (not required for commuter rail or ferries);
- Are in corridors with existing riders who will benefit from the proposed project that exceed 3,000 per average weekday and have a total capital cost less than $50 million (including all project elements) that is less than $3 million per mile, exclusive of rolling stock.

Exhibit 1-1: System-Wide Plan Development Process



1.2 2004 System-Wide Plan

The 2004 *System-Wide Transit Corridor Plan for the San Bernardino Valley*, prioritized transit corridors for development of premium transit service. The highest ranked corridor, the E Street Transit Corridor, has since progressed through the Project Development process and is scheduled for construction in 2010. Omnitrans, as the primary transit provider in San Bernardino Valley, is building upon the continued success of the E Street corridor through the project development process, with this update to the System-Wide Plan.

San Bernardino Valley is among the fastest growing areas in America, and is emerging as a major employment center. Omnitrans has taken the lead in developing reliable public transportation solutions for the Valley and currently operates an excellent transit network of local bus services that provides good coverage in its service area. The successful development of the E Street Corridor provides a framework for Omnitrans to assess the remaining corridors, and revisit the criteria developed for evaluating premium transit corridors. The new evaluation builds upon the previous criteria, enhancing the selection process based on Omnitrans experience with the E Street Corridor, and reflects the regional goals and policies developed since the creation of the 2004 Plan.

Since the 2004 Plan was adopted, there have been many improvements to the regional planning framework, including the development of the *San Bernardino County Long Range Transit Plan*, the *Compass Blueprint 2% Strategy, SANBAG's Transportation Land Use Integration Project* (prepared as part of the Compass Blueprint Strategy), the development of the San Bernardino Travel Demand Forecast Model, and the passage of the Senate Bill 375.

1.3 Development of the E Street Corridor

The sbX E Street Corridor BRT project is currently undergoing final design and will begin construction in 2010, and revenue operations are scheduled to begin in April 2013. The Project, shown in Exhibit 1-2, will provide reliable, fast and convenient service to the major activity centers in the E Street Corridor including the Cal State University San Bernardino Campus, the Downtown San Bernardino area, Hospitality Lane commercial area and the Loma Linda University and Medical Center. The 15.7 mile project

features 5.4 miles of exclusive lanes, 16 premium transit stations and Transit Signal Priority treatments at key intersections. BRT has proven successful in playing a key role in the economic development of many American cities and can contribute to the revitalization and economic growth of the communities it serves. The city of San Bernardino is currently developing its Downtown Plan, a vision centered on redevelopment, and is using the E Street sbX Project to encourage TODs.

With E Street, Omnitrans has successfully navigated through the Small Starts evaluation process - a key funding program developed under SAFTEA-LU - and is committed to serving as a partner to the cities of the valley, encouraging responsible development along planned transit corridors.

Roadway Sections

Roadway sections where the sbX will operate in mixed flow lanes will be kept with existing conditions. Areas of exclusive lanes will feature new pavement, painted and striped to visually separate the exclusive lanes from mixed flow lanes. Concrete pads will be placed at all station locations for the sbX vehicles.

Station Design

Station layouts were approved by stakeholders and public input to ensure that stations are appealing and highly visible. The station designs include both center-running stations (along the 5.4 miles of the alignment served by exclusive lanes) and side-running stations (along the mixed-flow portions of the alignment).

The station design, shown in Exhibit 1-3, is based on a “kit-of-parts” that can be assembled and laid out to suit the functionality of each station and meld with surrounding land uses as required by stakeholders. The design objectives for stations include:

- A location which is integrated and has linkages with adjacent land uses
- A distinctive image that emphasizes motion and technology and responds to the architectural environment as a whole
- A sense of place provided at stations
- Protection from the sun, wind and rain
- Accessibility for persons with disabilities and services incorporated into the design of the station
- Sense of security for patrons
- System and neighborhood information available at stations
- Design modularity to respond to individual site conditions, such as narrow sidewalks, and for flexibility in expansion
- Ease of maintenance and parts replacement
- Rapid boarding and alighting through raised platforms, low floor vehicles, fare prepayment or smart cards
- Sustainability considerations

The station architecture will include a kit-of-parts that are combined in various ways depending on unique site conditions, ridership, and adjoining land uses. Major components of the sbX station are the pylon with the sbX logo and the shelter. Other design considerations for the stations would include seating/bench, windscreens, bike racks, water fountains, and fare collection equipment.

Exhibit 1-2: E Street sbX Alignment

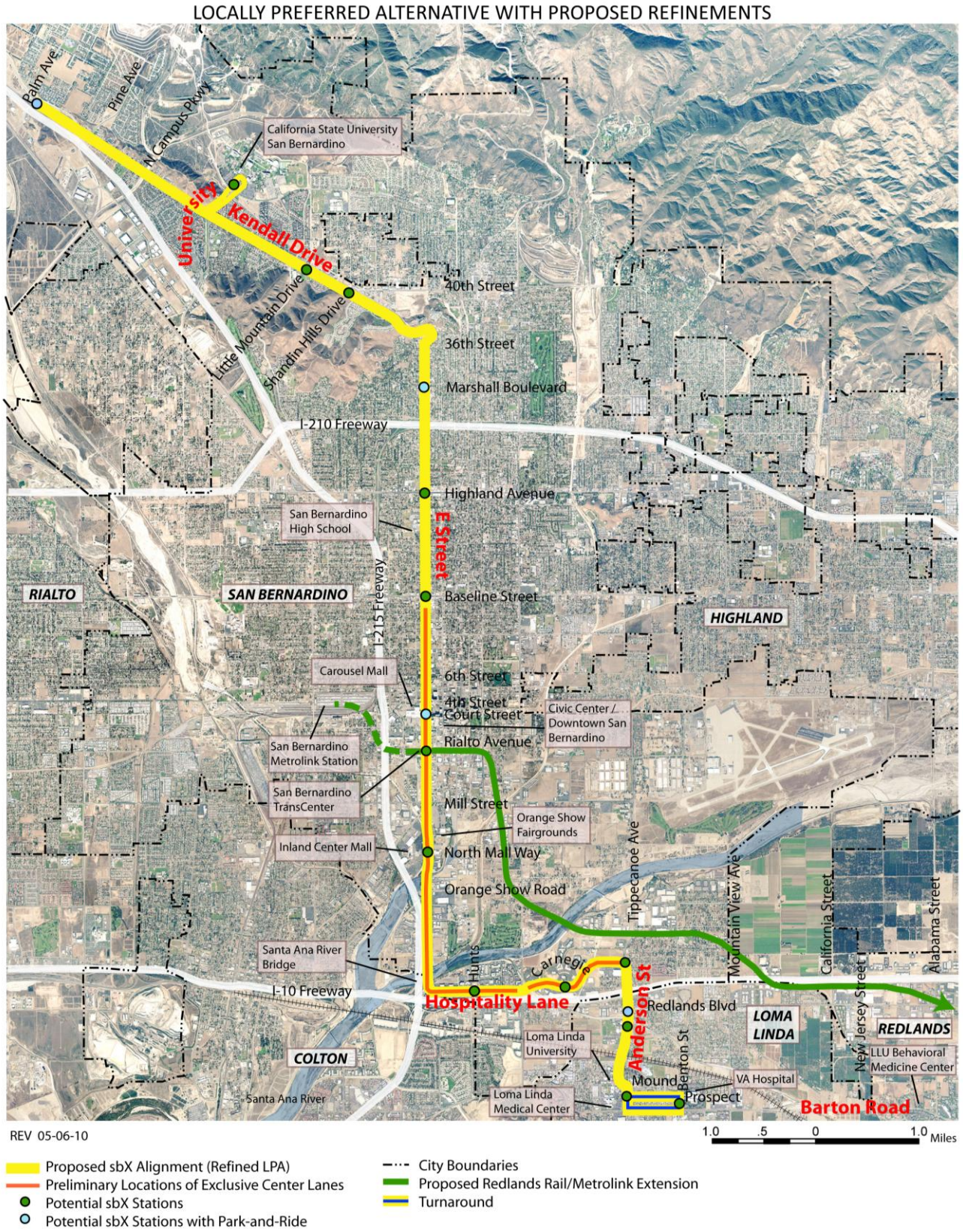


Exhibit 1-3: Center Running Station Design

Station Plan

The sbX alignment transverses a developed area, and on-street stations are located to create a comfortable, efficient transit place which fits into the community fabric and which avoids the taking of buildings.

Exhibit 1-4 illustrates a draft of the center platform station plan which would be located in the center of the street on a raised platform with access provided by crosswalks at intersections. The draft center station platform elevation is shown in Exhibit 1-5.

The draft layout of the side-running station plan is shown in Exhibit 1-6. These stations will preferably be located on the far side of an intersection wherever possible to facilitate transit priority, and to avoid stopped buses from blocking vehicles turning right from the corridor. The side-running station platform elevation is shown in Exhibit 1-7. In some instances due to curb cuts for driveways and other conditions, there is not enough space along the curbside for both the sbX and the local bus on the far side of the intersection. In these cases, the local bus would be located on the near side. Also, if a major activity center is on the near side, both local and sbX would be located there, if feasible.

For the center running condition, there would be approximately 15-feet from each edge of the platform to accommodate a canopy with its seating area, passenger amenities, fare collection equipment and to accommodate approximately a 10-foot wide access ramp to comply with relevant ADA accessibility requirements and provide clearance in front of the ticket vending machines.

Additional detail of station design elements are displayed in Exhibits 1-8 and 1-9.

Exhibit 1-4: Draft Center Running Station Plan

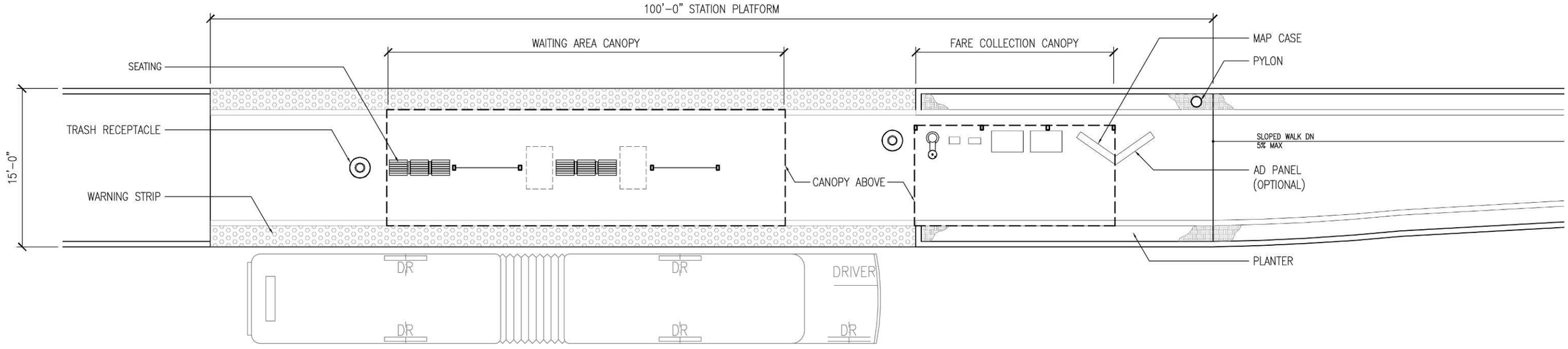


Exhibit 1-5: Draft Center Running Station Elevation

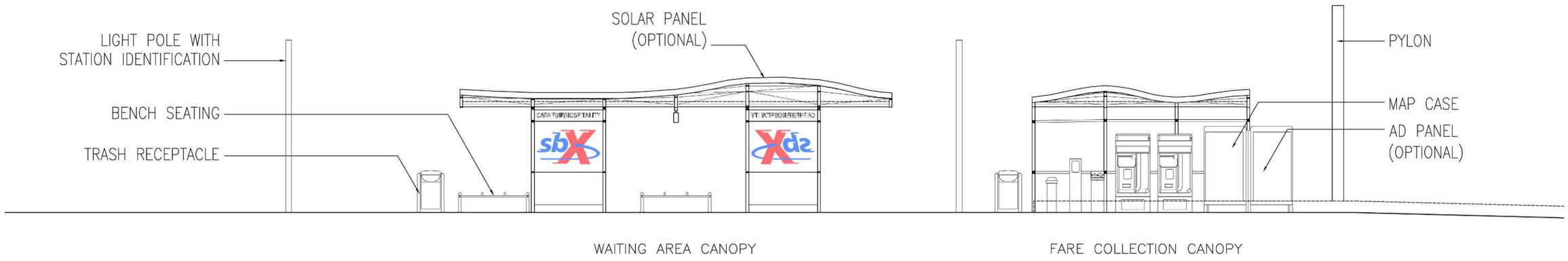


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Exhibit 1-6: Draft Side Running Station Plan

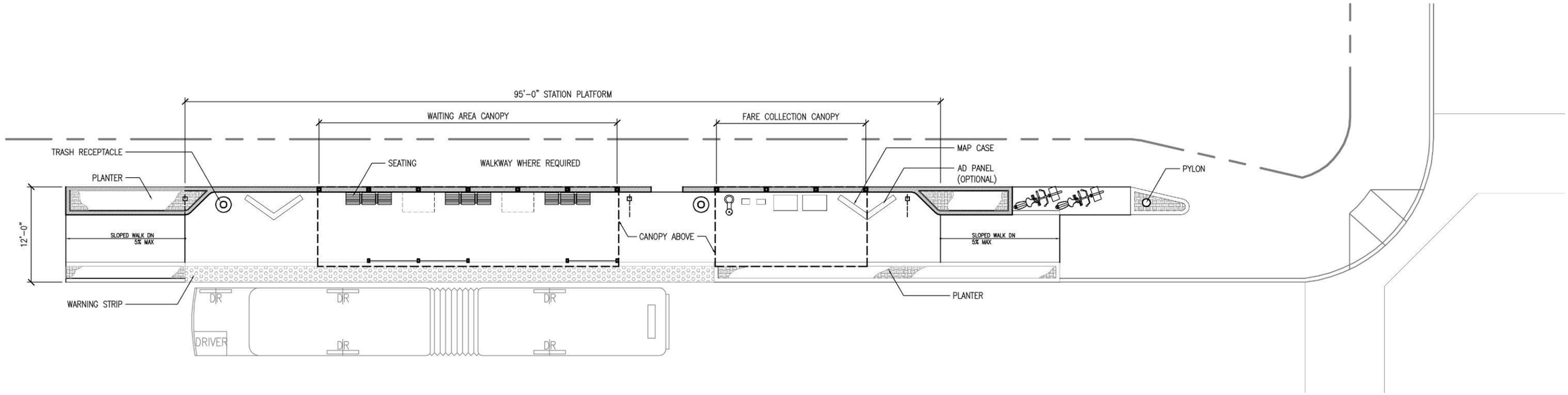

Exhibit 1-7: Draft Side Running Station Elevation

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Exhibit 1-8: View of the Station from Above

Exhibit 1-9: Station Detail

Transit Signal Priority

Transit signal priority is planned for the E street corridor to reduce sbX vehicle travel time. Significant progress has been made in developing the software to allow transit priority at signalized intersections. The use of loop detectors embedded in the pavement in advance of traffic signals will allow the traffic signal controllers to detect a bus as a distinct object separate from a car or truck. The following levels of transit priority are possible:

- Preemption - grants the right of way to a mass transit vehicle by interrupting the normal signal cycle sequence. (This strategy is not expected to be used by sbX vehicles.)
- Full Priority - may extend or shorten the traffic signal green indication of the transit phase. The transit phase may be a parallel vehicle phase or an independent phase. Full priority also allows the skipping of a traffic phase if needed to advance the required transit and/or compatible vehicle phase. Typically the phase skipped is a low volume phase during that period of time, which results in improved operations for the transit service with minimal impact to the traffic pattern. (This strategy may be considered for low volume street crossings.)
- Partial Priority - allows the traffic signal controller to advance the start (early green), or retard the yellow (extended green) of the transit phase and any compatible vehicle phase. Partial priority does not skip any vehicle phase to extend or bring up early transit phase. (This strategy will be used for all appropriate transit lane crossings.)

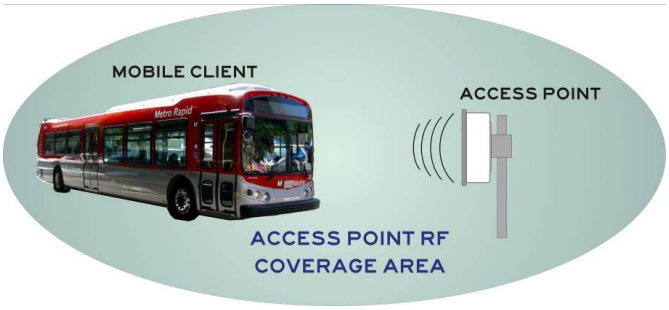
The concept for the bus priority treatment in the transit lane will be to locate the bus detectors far enough in advance of each signalized cross street so that the traffic signal system will have sufficient warning to adjust the signal phases on the cross street so that the bus will have the greatest chance to receive a green indication when it reaches the cross street. In some cases, this will occur by lengthening the green phase (extended green) for the transitway and the parallel street (borrowing time from the cross street), and in other cases, it may occur by shortening the green phase on the cross street (early green). Subsequent signal cycles would compensate the cross streets for the shortened cycle. The proper location of the advance loop detectors will avoid abrupt changes in a signal cycle (e.g., a green phase will not be truncated prior to a specified minimum amount of time) by placing the detectors far enough in advance of the cross street so that the bus traveling at the planned speed will arrive at the cross street and have a green signal indication.

It may not be feasible to provide this same level of priority treatment for buses traveling in both directions, if headways become too short. In that case, the peak direction of passenger demand would be given the higher level of priority treatment. At each cross street where there are nearby traffic signals, the exclusive lanes will also be signalized and the sbX buses will have their own signal indications. Omnitrans will also have to consider the traffic demand on cross streets in determining the level of priority for buses, and will only provide TSP if doing so does not exacerbate traffic congestion.

The sbX stop locations help determine, to some extent, the type of priority that is most appropriate. A street crossing where the transit stop is on the far side would most likely utilize the extended green feature to assure the bus makes it through the crossing and to the station. A street crossing that has the station on the near side would utilize the early green feature to get the bus moving sooner.

BRT signals and vehicle signals will be placed at each crossing to control the bus, automobile, pedestrian, and bicycle traffic at the crossing. Typically, the BRT crossings will be multi-phased (BRT phase and multiple vehicle phases to control turns across the intersection).

For exclusive lanes, the bus signals and the adjacent existing intersection signals will be integrated to create one signalized intersection controlling both automobiles and buses. Because intersection crossings would be controlled with signals, warning devices would not be required. Pedestrians will be allocated standard crossing time.



Turn movements from the mixed flow lanes crossing areas of exclusive lanes on the project alignment will also require separate signal phases with red arrows when the transit vehicles are crossing intersections. In addition, separate right turn lanes on intersecting streets will be created to hold the vehicles in queue until the BRT vehicle passes and the right turn lane receives the green arrow. This will be necessary to prevent a left or right turn across the exclusive lanes when a transit vehicle is moving in conjunction with the through traffic on the project alignment. The signal modifications will also include "active" No-Right-Turn indications and "Bus Coming" signs to prevent right turns across the exclusive lanes.

Signal modifications will include upgrades to signal controllers and software to accommodate the transit priority treatment at intersections. Pre-signals and queue cutters will be used to prevent traffic from stopping or blocking the exclusive lanes.

Traffic Controls

Buses will operate via a combination of visual traffic signal controls and special BRT signals. Basic signal prioritization for buses is to be implemented along the major arterials of the corridor.

Bus signal prioritization will use a system that is compatible with traffic control systems in each city. Signal priority systems include on-vehicle emitters, sensor/receiver on the fixed traffic control device, and interfaces to the traffic signal controller, which allows real time adjustments to signal phases and timing to facilitate bus movements.

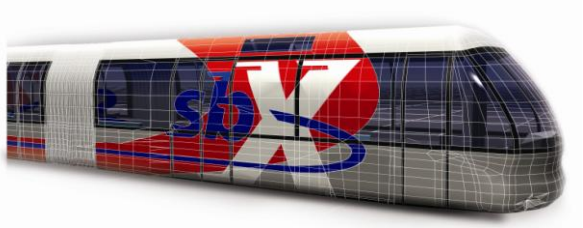
Certain existing signals must be modified to provide the hardware and software capabilities for signal prioritization and for additional phases for left turns across the BRT exclusive lanes.

Incorporation of hardware and software capabilities for signal prioritization, and addition of new signals meeting municipal traffic control standards will be developed in coordination with the traffic departments of the cities. An exception to standard traffic control design is that the bus lanes will have separate signals and an extended green where appropriate for oncoming buses.

BRT Vehicles

The BRT Vehicles are compressed natural gas (CNG) 60-foot, low floor articulated buses. The vehicles have 5-doors (three on the right side and two on the left side to serve the center platforms) allowing for ease of entry and exit. The low floor vehicles, shown in Exhibit 1-10, allow for level boardings at stations, decreasing station dwell times, and providing quick boarding for persons with disabilities. They will have a seated capacity of 46 passengers and standing room for approximately 50 additional passengers. For typical buses, maximum speed ranges between 55 and 65 mph.

Exhibit 1-10: sbX BRT Vehicles



Fare Collection

Fare collection equipment for the E Street BRT will utilize on-board fare collection. However, as the BRT network grows, Ticket Vending Machines (TVM) will be installed to improve vehicle boarding times.

1.4 California SB 375

There are an increasing number of incentives for communities to grow in a sustainable and transit friendly fashion. Omnitrans' aim is to provide communities an opportunity to develop and revitalize areas in the identified corridors into vibrant, livable and sustainable communities. Transit can serve as an opportunity to not only attract economic development, but serve to create better communities. Implementation of Senate Bill (SB) 375 will lead to the development of a set of Sustainable Community Strategies

that will look at creating transit friendly communities that encourage increased transit usage to reduce Vehicle Miles Traveled (VMT) from passenger vehicles. Communities that are dedicated to developing in this fashion are more likely to generate higher transit ridership. That, in turn, warrants increased levels of transit service.

Senate Bill 375, signed by the Governor in September of 2008, is an air quality bill designed to implement the greenhouse gas (GHG) reduction goals required by Assembly Bill (AB) 32 by integrating land use, regional transportation and housing planning. SB 375 requires regional transportation plans to meet the GHG reductions targets set in AB 32 by adopting a "sustainable community strategy" (SCS) or a development strategy that promotes the reduction of Vehicle Miles Traveled (VMT) from passenger vehicles. Transportation projects that are part of the SCS will have priority for State transportation funds. Although the law focuses on regional planning efforts, it specifically states that it does not supersede city or county land use powers, and local plans are not required to be consistent with the approved SCS. The SCS also allows transit priority projects and projects consistent with the SCS to be exempt or receive streamlined California Environmental Quality Act (CEQA) clearance.

Two types of projects are eligible for CEQA incentives if they are consistent with the SCS: Transit Priority Projects, and residential or mixed use residential projects. Transit Priority Projects are defined as having at least 50% residential use, a density of at least 20 units per net acre and located within a half mile of a regional transit corridor. Residential or mixed use residential projects must have at least 75 percent of the total square footage for residential use.

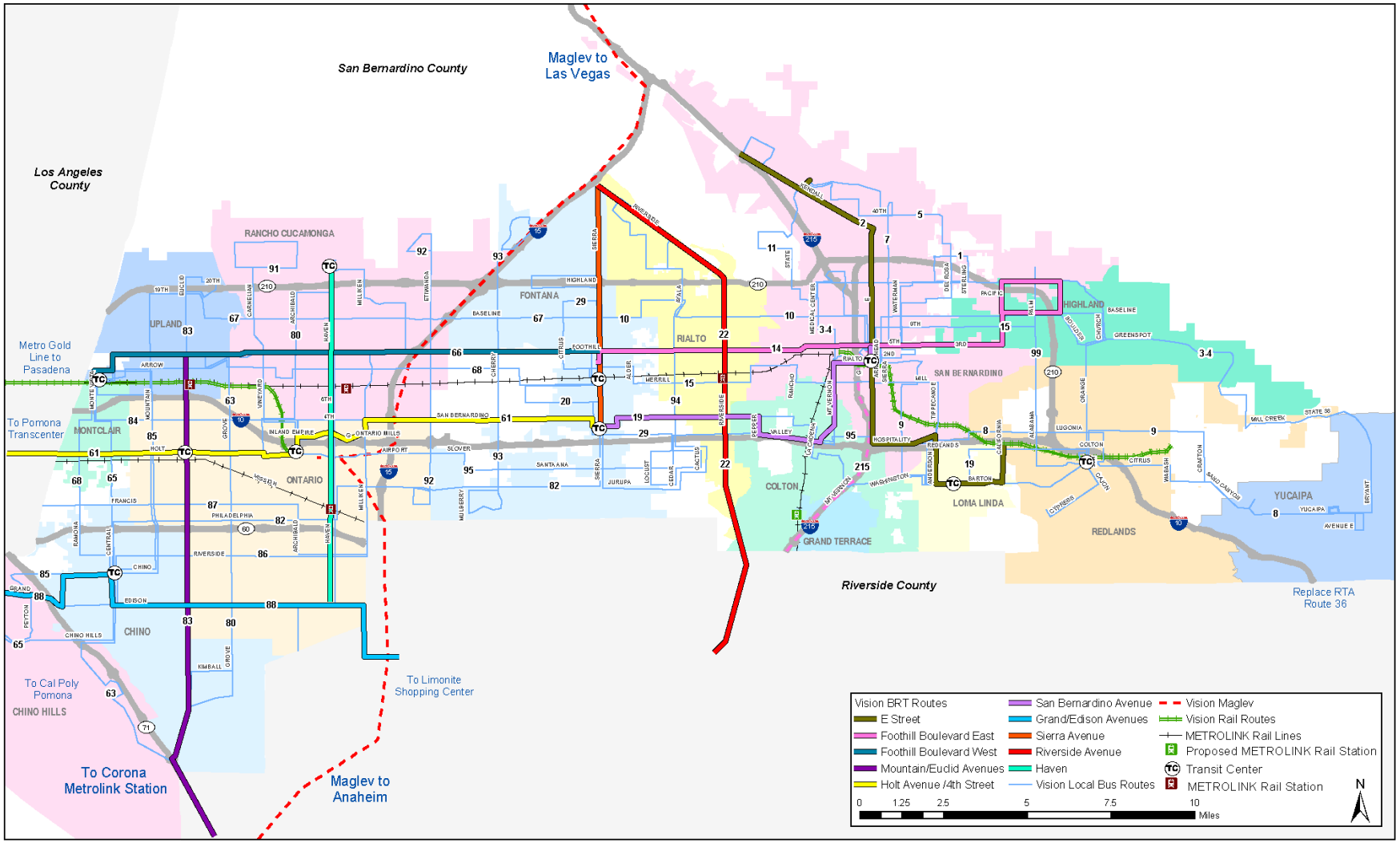
Transit Priority Projects qualify for a CEQA exemption if they: (1) are consistent with the SCS; (2) meet eight environmental criteria, including no wetlands/riparian areas, historic resources, hazards or endangered species located on the site; and (3) meet seven land use criteria, including affordable housing or open space requirements. Transit Priority Projects that do not meet the exemption requirements may still qualify for a streamlined environmental review under CEQA if certain criteria are met. The form of streamlined review includes a limited initial study or environmental impact review (EIR.)

Residential or mixed use residential projects do not need to analyze the following impacts in their CEQA documents: growth-inducing impacts; project or cumulative impacts from vehicle trips on global warming or the regional transportation network; or a reduced residential density alternative.

1.5 San Bernardino County Long Range Transit Plan

The *San Bernardino County Long Range Transit Plan (LRTP)* addresses the county's current and future travel challenges and aims to provide a system of transit facilities and services that can increase transit's role in the future. It developed a series of transit network alternatives for the year 2035, including a Vision Alternative, shown in Exhibit 1-11, that identifies ten BRT corridors for development. The Vision Alternative forecasts future transit ridership based on current socio-economic growth forecasts for the San Bernardino Valley, which assume a continuation of current development patterns. The LRTP also includes analysis of a policy-based Sustainable Land Use Alternative, shown in Exhibit 1-12, that addresses potential ridership impacts from the implementation of transit supportive land use policies and SB 375.

The System-Wide Plan uses both the Vision Alternative and Sustainable Land Use Alternative for estimating future ridership in Chapter 4.



VISION Premium Transit Services

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Exhibit 1-11: LRTP Vision Alternative

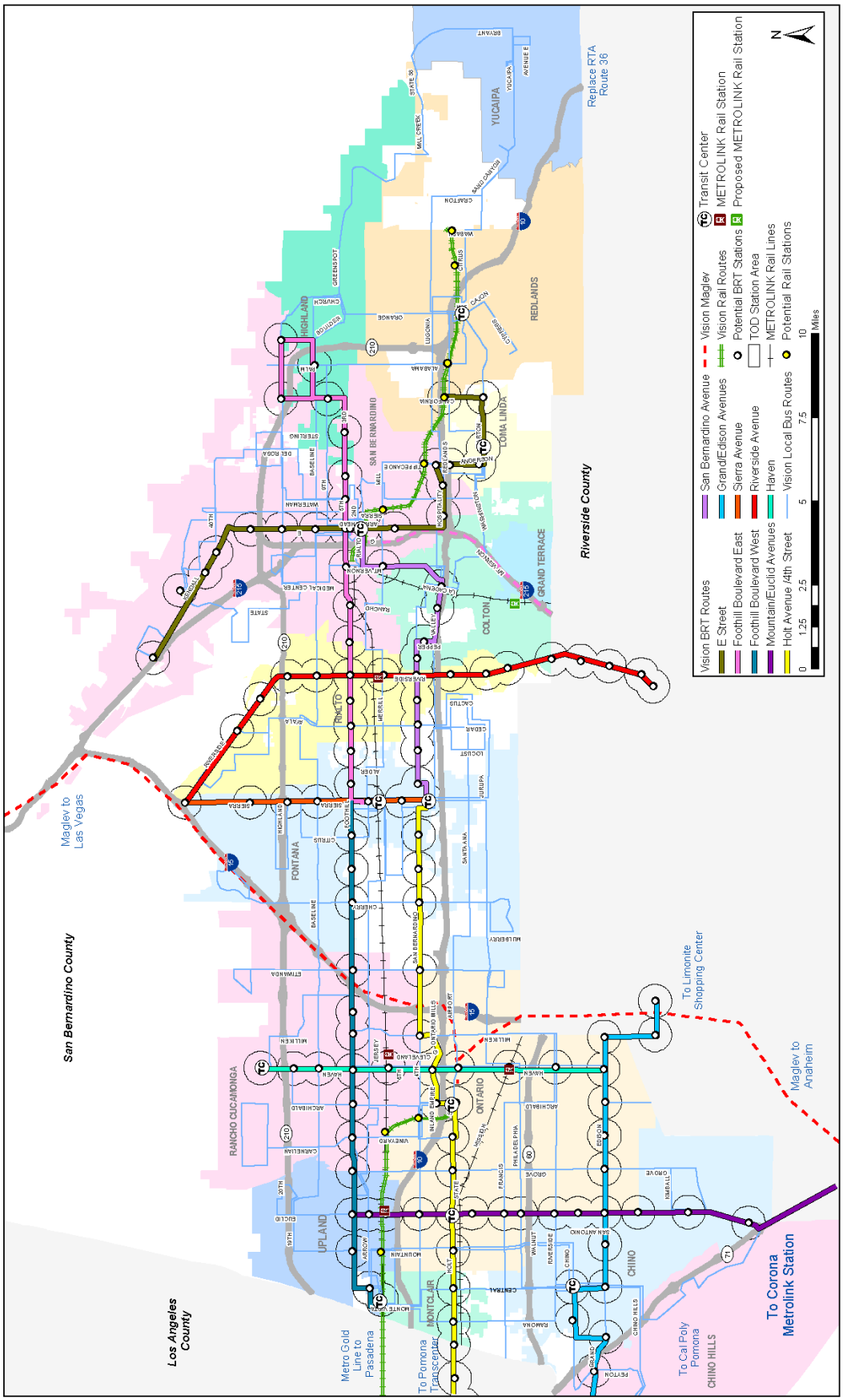


Exhibit 1-12: LRTP Sustainable Land Use Alternative

1.6 Regionally Approved Travel Demand Model

The San Bernardino Valley Focus Model (SBVFM) is used to produce transit ridership forecasts for the System-Wide Transit Corridor Plan.

The SBVFM was derived from the SCAG regional travel model, and focused to produce travel forecasts for the San Bernardino Valley. This model was originally developed in 2004 to provide transit ridership forecasts for the E Street Corridor BRT Project. The model has subsequently been updated to maintain consistency with recent updates of the SCAG regional model. The SBVFM has been successfully applied for producing ridership forecasts for the E Street Corridor BRT Project, San Bernardino County Long Range Transit Plan, and other transit and highway projects in the San Bernardino Valley.

The model development, model validation, and model application results are detailed in Chapter 4 of this report. The ridership forecasts include results for both the Vision and Sustainable Land Use development alternatives.

1.7 Roles and Responsibilities

Omnitrans, with this update of the System-Wide Plan, encourages communities in the Valley to provide a choice in improved mobility, accessibility and ultimately in lifestyle. These opportunities, in the form of new development around station areas, and the ability to utilize federal, state and local resources to encourage these developments and better transit service, are dependent on dedicated partnership support. Omnitrans intends to develop and operate the BRT infrastructure and the opportunities that premium transit encourages in the ten identified corridors. However; economic development is heavily dependent on local jurisdictions ability to provide a proper policy background and support.

Table 1-1 represents the responsibilities of both Omnitrans and the partnering communities in both the development and the operation of a premium transit service. Development of the corridors can only occur when all parties involved take a shared ownership of the transit system.

The System-Wide Plan is the first step in identifying the potential of each corridor. Each corridor has undergone a technical analysis including ridership projections, development opportunities, transit supportive land use, as well as development of capital and operating costs. Due to limited resources, not all corridors can be developed at once; this plan indicates which corridors will have the highest ridership potential and greatest likelihood of receiving federal funding and groups the corridors into development phases. Entering the next phase of project development, agreements between each of the responsible parties and Omnitrans will be made.

1.8 Opportunities to Shape Development/Redevelopment

The sbX network like other forms of high-capacity, high-quality transit, has the opportunity to promote transit-supportive land development – promoting greater accessibility and employment and economic opportunities by concentrating development, increasing property values, and creating more livable places. The sbX corridors can both serve existing land use and have the ability to create new land forms along the transit system.

1.8.1 Economic Development

The 2004 FTA report, *Characteristics of Bus Rapid Transit for Decision Making*, noted that development around BRT stations in Ottawa, Canada (the Transitway system) found new development with an aggregate value of over $675 million (US$) had been constructed in the first 15 years after the Transitway system was constructed. In a similar study by Boston Massachusetts MBTA indicates $700 million in new development and construction around Silver Line BRT stations to date. In addition, a report indicates that residential properties within walking distance of stations on Brisbane's SE Busway in Australia have increased in value 20 percent faster than properties in the same corridor that are not in walking distance. Between 1983 when it opened and 1995, there was over $300 million worth of construction adjacent to stations on the Martin Luther King or East Busway in Pittsburgh, despite only modest economic gains elsewhere in the Pittsburgh Region.

Table 1-1: Parties Responsibilities by Project Phase

	Omnitrans	Partnering Community	Shared
Implementation Phase			
	FTA Funding Application	Fees and Permit Costs	Alternatives Analysis and Project Definition
	Plan and Drawing Development	Support Personnel and Review	Utility Consultations and Coordination
	Construction Management	Plan Check and Inspection	Station Planning
	Right of Way Acquisitions	Transit Supportive Land Use and Zoning Policies	
	Environmental Clearance		
Construction Phase			
	Removal and Replacement of Landscaping	Support Personnel and Review	Staging and Construction Work and Storage Areas
	Street and Roadway Improvements		Compliance with Environmental Laws
	Installation of Traffic Signals and Transit Signal Priority (TSP) Equipment		Hazardous and Contaminated Substances
			Traffic Coordination
Operation and Maintenance Phase			
	System Service	Landscaping and Irrigation	Park and Rides
	Stations	Streets and Rights-of-Way	
	Project Related Signage	Station Security	
	Replacement or upgrades of TSP	Street lighting, Signage, traffic controls	
		Transit Oriented Development	

1.8.2 Transit-Oriented Developments

The sbX network has the potential to generate development and redevelopment when used in a transit supportive fashion. Land use plans and policies that promote and guide increased development density along transportation corridors, particularly around stations, help to ensure the vitality of transit networks and the land uses that encourage transit usage. Conversely, continued growth patterns of low density suburban development result in an environment that is not conducive to the development and implementation of improved transit alternatives.

This synergy between land use and transportation is a goal of the "livable communities" or "smart growth" philosophies. Experience in other parts of the country and around the world has shown that concentrating development near transit stations and providing linkages to stations, often called Transit Villages or Transit Oriented Development (TOD), is an effective way to shift more trips to transit from private vehicle modes of travel. The relief in traffic congestion helps to improve the overall environmental quality for both local communities and the surrounding region by protecting mature, established neighborhoods as well as environmentally sensitive areas.

The passage of SB 375 in November of 2008 affirms the connection of land use and transit. As discussed in Section 1.4, SB 375 prioritizes state transportation funds to transportation projects that support the goals of reducing greenhouse gas emissions from passenger vehicles. TOD's

are a key element of SB 375, and are eligible for streamlined environmental clearance.

TODs are a form of Smart Growth that refers to a compact, mixed-use, pedestrian-oriented neighborhood surrounding or adjacent to a transit station. TODs often feature a variety of residential types (townhouses, rental units, condominiums, single-family homes) combined with retail, employment centers, public areas and other services. TODs typically have a radius of one-quarter to one-half mile (which represents the average distance a pedestrian can walk within five to ten minutes) to or from a rail or bus station that is surrounded by high-density development with lower density development gradually spreading outwards. By locating a mix of amenities and activities around transit stations, adjacent retail and residential space become more desirable through enhanced accessibility, and transit ridership increases as it becomes a viable and convenient mode of travel.

As shown in Exhibit 1-13, typical characteristics of a Transit Village or TOD within one-quarter to one-half mile of a station are:

- An attractively designed transit station with pedestrian amenities
- Diversity of uses such as residential, retail, office, entertainment and recreational facilities.
- Higher development intensity nearest to the transit station tapering off near the edges of TOD
- Public and civic spaces near stations
- Interconnected network of streets
- Pedestrian connections, such as continuous sidewalks and pedestrian paths to the station and throughout the development with features such as:
    - adequate sidewalk widths
    - decorative sidewalk and crosswalk treatments

Exhibit 1-13: TOD Characteristics

  - appropriately sized street trees in tree wells at the curb
  - pedestrian-oriented signage
  - properly scaled street lighting
  - buildings and their entrances oriented toward the street
  - parking behind buildings
  - traffic calming measures in neighborhoods adjacent to the station
- Well-designed and managed parking, and a reduction in parking requirements near transit
- A bicycle network and other non-motor vehicle modes connecting the transit station with other transit stops and the surrounding area
- Special attention focused on buildings designed to enhance the pedestrian environment

SANBAG's Long Range Transit Plan contains regional examples of successful TODs as well as example policies for implementation. Omnitrans will work with partner cities to develop supportive transit plans and policies for the sbX corridors and will provide support for:

- Updating General Plans
- Preparing Specific Plans
- Preparing Station Area Plans
- Building Community Support
- Urban Design
- Parking Management Strategies
- Zoning
- Affordable Housing

1.8.3 Density Targets

The book, "The New Transit Town: Best Practices in Transit-Oriented Development," describes the best practices in TODs. This source states that there are no absolute densities for a TOD and some of the case studies presented have densities ranging from 10 to 100 dwelling units per acre (DU/AC). Table 1-2 shows the estimated densities of some of the examples of TODs discussed previously.

At densities of around six to seven households per acre transit use begins to increase and vehicle trips begin a corresponding decline. At about 50 households per acre, the number of trips taken daily by vehicles, transit, and walking become about the same. The Urban Land Institute has developed the following minimum densities for supporting transit, shown in Table 1-3.

It is important to note that higher densities and compact developments indirectly lead to higher transit ridership and less automobile use. In mixed use, high density developments, the origins and destinations of any given trip are physically closer. In other words, goods and services are closer together, resulting in shorter travel distances and less vehicle miles traveled (VMT). Studies have shown that employment densities at trip-destinations have a greater influence on ridership than do land-use mix and population densities at trip origins.[1] It is therefore critical to increase development densities and locate employment opportunities near transit in order to ensure high TOD ridership.

A person living in a mixed use, high density development would likely opt for a mode of transit other than an automobile and instead use bus, rail, bicycle, or walk. Less VMT means that there are fewer cars on the road, which reduces energy consumption, decreases air pollution, and lowers traffic congestion. A forthcoming study for Transit Cooperative Research Program *Ensuring Full Potential Ridership from Transit-Oriented Development (TCRP H-27A)* by PB Place Making, Dr Robert Cervero, The Urban Land Institute and the Center for Transit Oriented Development, shows that, on average, TOD housing produces 50% fewer automobile trips in the four urbanized areas (Philadelphia/N.E. New Jersey; Portland, Oregon; metropolitan Washington D.C.; and the East Bay of the San Francisco Bay Area).

Many cities around the United States are looking to TODs to protect natural resources and sensitive environmental areas, including mature established neighborhoods. Growth management areas and protection zones are often considered complementary policies and often used in conjunction with TOD's to strengthen the focus of growth near transit and sustainable neighborhoods.

[1] Cervero, Robert. 2008. Effects of TOD on Housing Parking and Travel. TCRP Report 128. August 1, 2008.

Table 1-2: Examples of TOD Densities

Project	Estimated Density (DU/acre)
Mission Meridian, South Pasadena	40
Del Mar Station, Pasadena	100
The Stuart, Pasadena	25
Fruitvale Village, Oakland	22
Wilshire/Vermont Station, Los Angeles	129
Hollywood & Vine (+ Legacy Apts.), Los Angeles	122
Mandela Gateway, Oakland	36
Museum Place, Portland	333
Orenco Station, Portland	11
Village Walk, Claremont	23

Source: Gruen Associates

Table 1-3: ULI's Minimum Densities for Supporting Transit

MINIMUM DENSITIES FOR SUPPORTING TRANSIT

	Local Bus, Intermediate Service[1]	Local Bus, Frequent Service[2]	Light Rail[3]	Transit[4]
Dwelling units per acre	7	15	9	12
Residents per acre	18	38	23	30
Employees per acre	20	75	125+	N.A.[5]

Note: The density of the employment destination is more important in influencing trips than the density of the residential area where the trips originate.

1. Average density; varies as a function of downtown size and distance to downtown.
2. Average density over a two-square-mile tributary area.
3. Average density for a corridor of 25 to 100 square miles; transit to downtowns of 20 to 30 million square feet of nonresidential space.
4. Average density for a corridor of 100 to 150 square miles; transit to downtowns of more than 50 million square feet of nonresidential space.
5. Not available.

Sources: For residential densities, Boris Pushkarev and Jeffrey Zupan, *Public Transportation and Land Use Policy* (Bloomington and London: Indiana University Press, 1977). For employment densities, Reid Ewing, "Transit Oriented Development in the Sunbelt," *Transportation Research Record* 1552 (Transportation Research Board, National Research Council, Washington, D.C., 1996). L.D. Frank and Gary Pivo, *The Relationship between Land Use and Travel Behavior in the Puget Sound Region* (Olympia: Washington State Department of Transportation, 1994).

Source: Urban Land Institute, 2003.

Another benefit of increased density is the reduced costs associated with the building of infrastructure (sewer, water, highway, and utility lines). It stands to reason that if housing, jobs, and other associated activities are closer together, then fewer roads, sewers, and utility lines are needed to serve the area.

Table 1-4 illustrates TOD principles and potential benefits of TODs.

Densities do not need to reflect urban style-growth along the entire transit corridor, station areas deemed unsuitable for development by local communities can be accommodated at other stations. If existing development does not meet appropriate densities, then station area plans can be developed to raise the level of development to reach the corridor threshold. San Francisco Bay Area's Metropolitan Transportation Commission (MTC) has released an interim evaluation of their TOD policy that clearly shows that corridor thresholds can be a successful implementation tool to accommodate future growth.

Table 1-5 shows corridor housing unit thresholds averaged by station area for project types in the MTC jurisdiction. Table 1-6 shows performance of TOD's in other regions.

MTC notes that employment densities have the potential to be effective in developing corridor thresholds or as a means to gain credit to meet housing thresholds. However significant challenges exist in enacting employment thresholds including:

- Employment works best in generating transit ridership if job centers are concentrated at hubs as opposed to being spread along a corridor. Large central business districts are usually critical destinations, and corridor thresholds may encourage the dispersal of employment sites.
- Overall demand for office space varies by corridor and needs to be related to market demand.
- In outlying areas, residential achievable densities are generally much higher than achievable densities for employment.
- Cross-commuting to outlying employment areas may have a limited effect on transit ridership without strong parking management.
- Local jurisdictions already have many reasons to zone for employment, such as sales tax revenue, whereas affordable housing is usually not promoted.
- Housing units are easier to define and measure than employment uses, which rely heavily on assumptions such as the type of tenant and the number of workers expected to occupy the building.

In summary, land use and transportation are interdependent and must be considered carefully in the development of a System-Wide Plan for transit improvements.

Table 1-4: TOD Principles and Benefits

TOD Principles	Benefits
▪ TODs occupy land within ¼ mile to ½ mile radius around a rail or bus station, or within 125 to 500 acres. ▪ Typically, TOD areas are composed of three elements: o station area with platforms, and transit and passenger amenities, o core area within a five-minute walk of the station or about a 1/4 mile of the station, and the most intense employment, residential, and retail uses as well as convenience commercial for passengers, and o a neighboring ring within a ten-minute walk of station or about 1/4 to 1/2 mile of the station containing residential, commercial and other uses. ▪ A TOD must be a walkable, pedestrian-oriented area with amenities such as street trees, benches, crosswalks, decorative paving, and public art. Direct connections between different land uses should be provided. ▪ TODs have connectivity to the regional transit system and bicycle/trail and shuttle links to the area outside the ½-mile area ▪ Plans, policies and zoning provisions relating to mix of uses and building setbacks, and providing incentives such as density bonuses, floor area ratio increases, reduction of parking requirements, etc. play a significant role in facilitating a TOD.	▪ Environmental o Improved air quality and energy consumption: Decreased auto trips lead to lower emissions which results in improved air quality. o Increased transit ridership and decreased congestion: By decreasing driving, TODs result in reduced congestion. o Conservation of land and open space: TODs are compact developments, and therefore, consume less land than lower-intensity, auto-oriented development ▪ Economic o Catalyst for economic development: TODs can act as a catalyst for nearby properties to invest in their development as well. o Redevelopment: TODs can be used to redevelop vacant or underutilized properties and declining urban neighborhoods. o Increased property value: TODs can be used to revitalize the area within ¼ mile of the station. o Decrease infrastructure costs: TODs help in the reduction of infrastructure costs due to compact and infill development. o Revenue for transit systems: Increased ridership leads to additional revenues for transit systems. o Reduced household spending: By reducing gasoline costs, TODs contribute to a reduction in household spending on transportation. ▪ Social o Increased housing and employment choices: TODs provide a diversity of housing and employment types within close proximity to the transit station. o Greater mobility choices: By creating activity nodes linked by transit, TODs increase mobility options in congested areas. Young people, the elderly, those without cars and those not wanting to drive also have mobility. o Health benefits: By providing more opportunities

TOD Principles	Benefits
	for walking and bicycling, TODs offer health benefits. ○ Enhanced sense of community: By bringing more people and businesses closer, and creating an activity hub, TODs enhance the sense of community. ○ Enhanced public safety. By creating more active places used throughout the day and night providing "eyes on the street", TODs help increase safety. ○ Quality of life – by reducing the driving time for long automobile commutes, people can recapture this wasted time or other activities.

Sources: Statewide Transit-Oriented Development Study; Gruen Associates

Table 1-5: MTC's Housing Threshold by Transit Mode

Project Type	BART	Light Rail	Bus Rapid Transit	Commuter Rail	Ferry
Housing Threshold	3,850	3,300	2,750	2,200	750
Source: Metropolitan Transportation Commission, 2006					

Table 1-6: Performance of TOD's in other regions

System	Average Housing Units/Station	MTC's Equivalent TOD Policy Threshold	% Difference from TOD Policy Threshold
New Jersey - Hudson Bergen light Rail	7,063	3,300	+114%
New Jersey - Transit Villages	3,558	2,200-3,850*	+39%
Chicago - Evanston	4,192	2,200	+91%
Arlington County - Rosslyn Ballston Corridor	5,022	3,850	+30%
California - Various Examples	3,113	2,200-3,850*	-4%
*Varies depending on station *Source: Metropolitan Transportation Commission, 2006*			

Chapter 2 Identification of Major Corridors

Downtown San Bernardino transit mall

The primary purpose of the System-Wide Transit Corridor Plan is to identify and prioritize major transit corridors within the Omnitrans service area that have potential for the development of major fixed route transit investments. This chapter introduces the corridors that meet the goals and objectives identified in Chapter 1, specifically:

- Identify Major Travel Corridors
- Accommodate Growth
- Support Economic Development/TOD
- Improve Transit Service

2.1 Identification Criteria

Currently, Omnitrans operates an excellent network of local bus services that provide good coverage in its general service area. However, for the most part, the local routes do not have operating speeds capable of competing well with the automobile in capturing choice riders who are making medium distance trips within the San Bernardino Valley and neighboring communities. The introduction of premium transit modes and services in these corridors in the future will allow Omnitrans to achieve better market penetration, while being able to positively influence the livability of communities in its service area. The introduction of faster, more frequent, and direct transit service in the form of Bus Rapid Transit (BRT) or other high profile transit modes has proven beneficial to many communities around the country.

From a geographic and connectivity perspective, the main objective for selecting major transit corridors was to create a "backbone" system of interconnecting east-west and north-south links that will best serve the future travel desires in the Omnitrans service area.

In identifying these transit corridors, the study team considered a variety of issues, including:

- Major travel patterns, traffic volumes and areas of travel delay/congestion;
- Existing transit ridership, particularly highly used routes;
- Connectivity between key trip generators and east and west valley origins and destinations;
- Geographic coverage of major residential areas and activity centers and expected population/employment growth;
- Potential for successful implementation;
- Potential for market penetration and growth in future demand for transit services;
- Potential to provide superior service to long-distance transit riders;
- Potential to positively influence community development/redevelopment and the livability of communities; and
- Transit dependency based on demographics data and land use patterns.

In gathering information about the entire service area and the individual corridors, the study team referred to:

- The Omnitrans Short Range Transit Plan FY 2008 to 2013 (SRTP);
- The San Bernardino County Long Range Transit Plan;
- SCAG's 2008 Regional Transportation Plan;
- SANBAG's Transportation Land Use Integration Project;
- Local Jurisdictions' General Plans and Specific Plans;
- Future Transit Investment Strategy (2010-2040);
- San Bernardino County Transportation Plan;
- Discussions with Omnitrans, SANBAG and local jurisdiction staff;
- Other related technical reports and databases on ridership and service performance;
- Overall travel patterns from travel surveys and travel model assignments; and

- Growth forecasts from SANBAG and the Southern California Association of Governments (SCAG).

Existing bus shelter on Hospitality Lane

2.2 Identification of Major Corridors

This section identifies the ten potential corridors identified for implementation, as shown in Exhibit 2-1. The route lengths and corridor size are summarized in Table 2-1. This section presents the first corridor phased for implementation, the E Street Corridor that was identified in the 2004 System-Wide Plan, and describes the preferred alignment for that corridor. The remainder of this section presents similar descriptions of corridors and alignments for the other nine potential corridors (defined as the areas within one mile of a proposed BRT route) for implementation as shown in Exhibit 2-1.

Corridor 1: E Street

The E Street Corridor roughly follows the current path of Omnitrans Route 2 from California State University San Bernardino (CSUSB) south through downtown San Bernardino to Hospitality Lane and on to the City of Loma Linda. The 2004 version of the System-Wide Plan identified a potential extension of the E Street Corridor into Downtown Redlands. As development of the E Street Corridor progressed, a passenger rail line connecting Redlands to Downtown San Bernardino has also progressed.

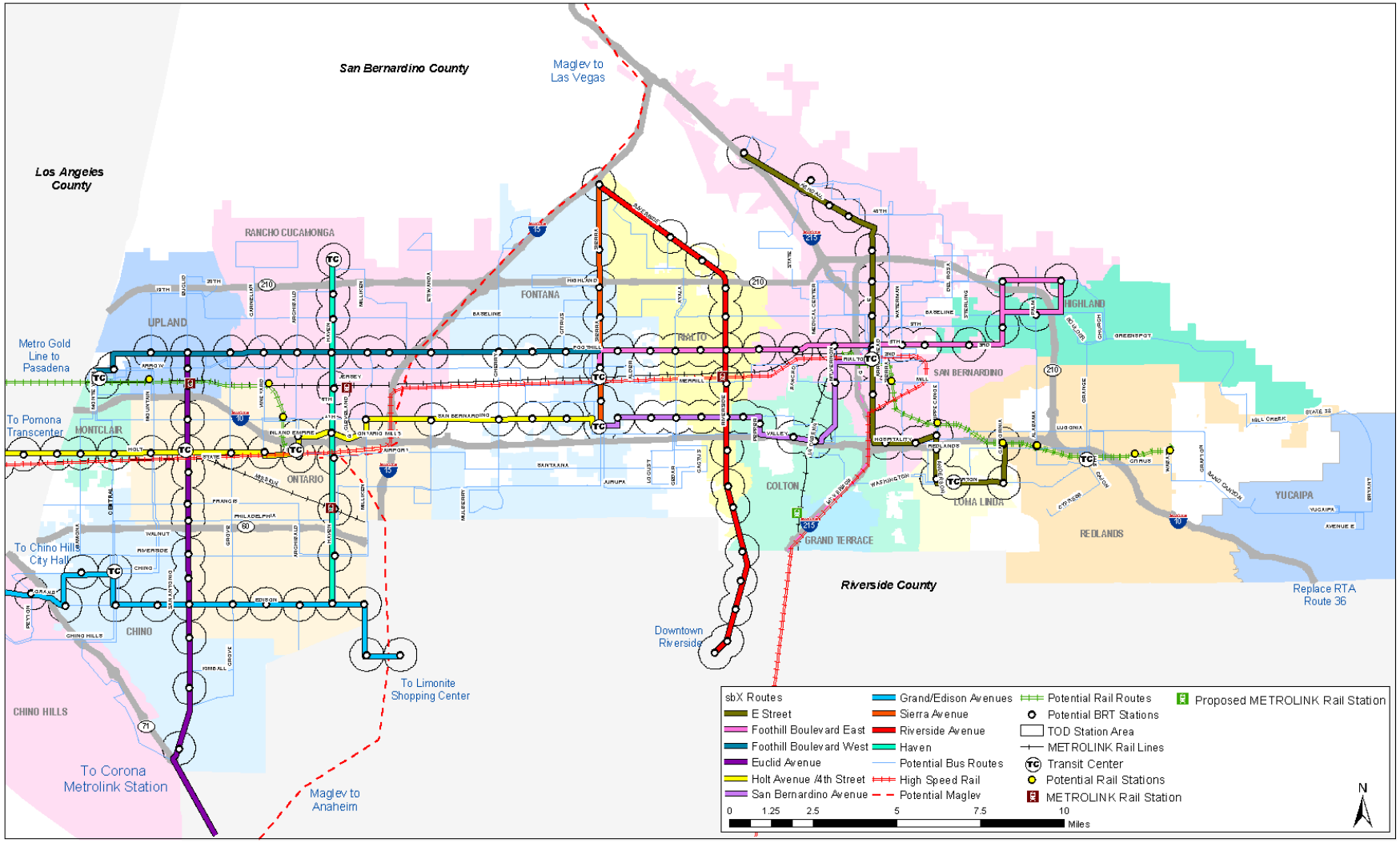
The extension of the E Street Corridor is now centered on Barton Road and heads north on California Avenue to connect to a planned rail station on the Redlands Passenger Rail Alignment. The Corridor has possible future transit connections with two Metrolink commuter rail routes at the planned San Bernardino Transit Station site, connections to the Victor Valley Transit Authority, Mountain Area Regional Transit Authority, Sun Line Transit, Riverside Transit Authority, Riverside County (I-215 HOV Corridor and the Bi-County Corridor) and the proposed Redlands Rail Line.

Preferred Alignment

Over the past five years, the sbX E Street Corridor has evolved as the highest priority corridor identified in the 2004 System-Wide Plan, through the Alternatives Analysis, selection of the Locally Preferred Alternative (LPA), FTA Small Starts rating process, and into the current Project Development phase. The project is in final design and construction is anticipated to begin in 2010. The sbX E Street Corridor BRT Project as

Table 2-1: Corridor Description

	1. E Street Corridor	2. Foothill East Corridor	3. Foothill West Corridor	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
1. Corridor Length (in miles)	18.3	16.6	16.2	17.9	11.0	20.4	17.4	7.6	16.4	10.4
2. Corridor Area (Square. miles)	37.2	36.4	33.8	26.7	24.1	35.5	27.6	17.1	26.6	23.9
3. Residential Area Square Miles	13.4	18.4	15.4	10.7	10.7	11.3	6.5	6.7	9.0	7.3



Omnitrans System-Wide Plan Map

Omnitrans System-Wide Transit Corridor Plan

Exhibit 2-1: System-Wide Plan Routes

shown in Exhibit 1-2 is a 15.7-mile long BRT project that will connect the northern portion of the City of San Bernardino with the City of Loma Linda. The BRT alignment starts south of Kendall Drive and Palm Avenue and continues south along Kendall Drive into CSUSB. From CSUSB it returns to Kendall Drive and proceeds south to E Street where it passes through Downtown San Bernardino to Hospitality Lane. The route then heads east along Hospitality Lane, and then south along Tippecanoe Avenue and Anderson Street to Barton Road. The corridor then heads north on Benton Street and West on Prospect Avenue back to Anderson Street.

This report looks at the development of the entire corridor including the extension along Barton Road and north on California Avenue to connect to the Redlands Rail alignment, as shown in Exhibit 2-2, for a total alignment 18.3 miles in length.

Corridor 2: Foothill Boulevard East

The corridor is centered on Foothill Boulevard which runs from the Los Angeles County line past San Bernardino International (SBI) Airport and the Highland Plaza area. The Foothill Boulevard corridor has been divided into two segments, east and west, for easier study and for a phased implementation of future premium transit services. Corridor 2 is the eastern part of the Foothill Corridor. It runs from the Fontana Metrolink station past SBI, with the northern boundary running along Highland Avenue and the southern boundary at Randall and San Bernardino Avenues. Corridor 2 crosses Corridor 1 (E Street) in downtown San Bernardino. Major activity centers in Corridor 2 include the Fontana Metrolink Station (a major transfer point for Omnitrans riders), the San Bernardino Civic Center, the 4th Street Transit Mall, Highland Plaza, and SBI. Exhibit 2-3 shows the corridor and potential alignment.

Potential Alignment

sbX Route 2 is an east/west BRT route with a western terminal station at the Fontana Metrolink Station. This route follows Foothill Blvd to 5th Street in San Bernardino and then heads north on Victoria Avenue, west on Highland Avenue, south on Boulder Avenue, and east on Baseline Avenue to the eastern terminal station at Palm Street (in Highland), and then closes the loop by heading south on Victoria Avenue This 16 mile alignment includes 17 transit stations and two park-and-ride lots. Four of the stations are optional stations, subject to elimination depending on the model-generated ridership potential. The three eastern-most stations are located on a loop, the only loop on any of the ten alignment alternatives studied in the preliminary model run.

Corridor 3: Foothill Boulevard West

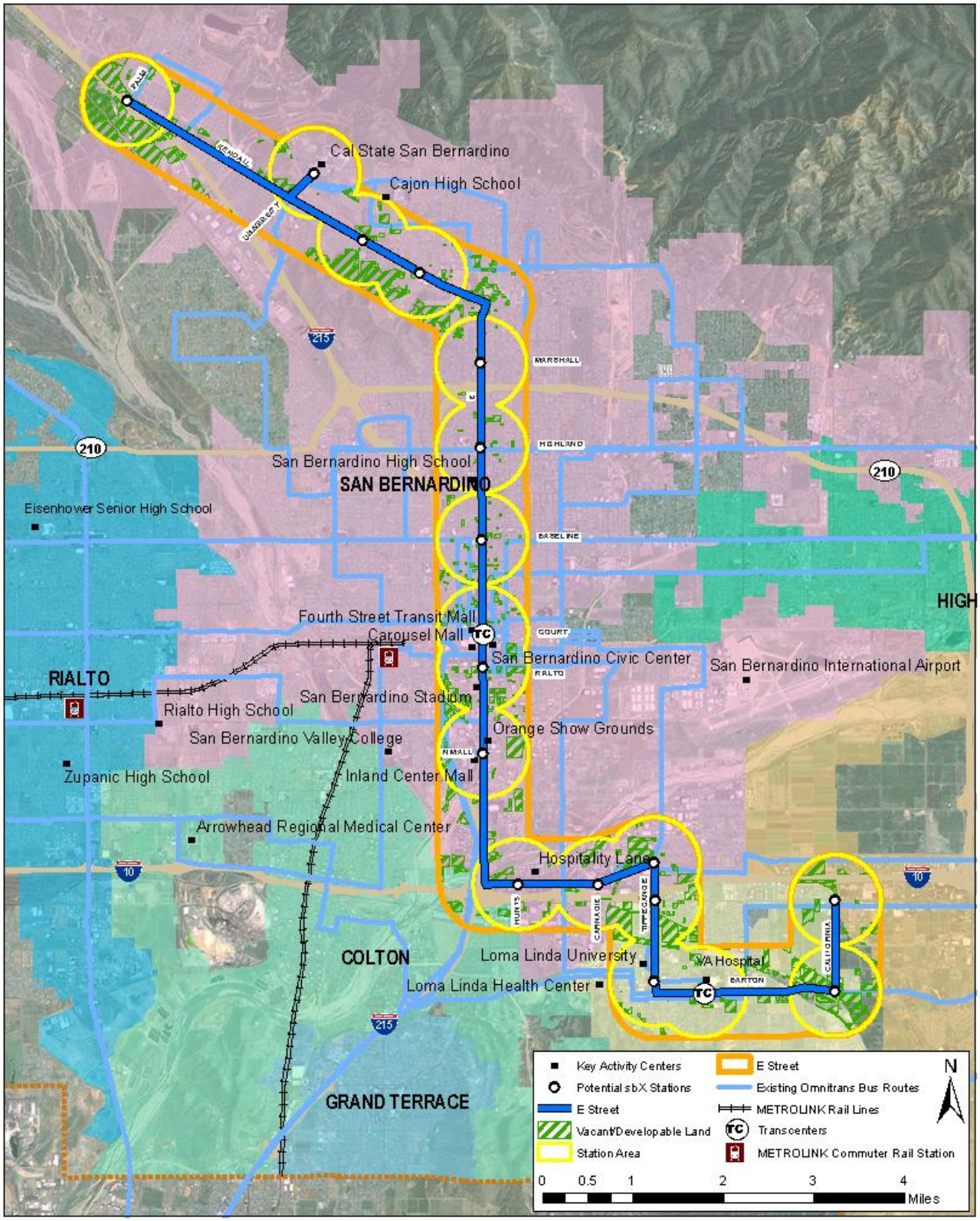
Corridor 3 contains the western part of the Foothill Boulevard Corridor. This corridor is anchored on the west by the Montclair Transcenter, which includes the Montclair Metrolink Station and a major transit transfer hub, and on the east by the Fontana Metrolink Station. Other major activity centers include San Antonio Community Hospital, Montclair Plaza, and new developments in the City of Rancho Cucamonga including Victoria Gardens Mall.

Possible regional connections to Corridor 3 from the Victor Valley would occur along I-15 and inter-county transit connections to Los Angeles exist from the Montclair Transcenter and Metrolink Stations. In the future, a possible extension of the Metro Rail Gold Line along the I-210 will reach Corridor 3 at the Montclair Transcenter.

Potential Alignment

sbX Route 3 is an east/west BRT route with a western terminal station at the Montclair Transcenter. This route follows Foothill Boulevard through the cities of Upland, Rancho Cucamonga and Fontana to an eastern terminal station at the Fontana Metrolink Station. The alignment connects with Corridor 4 - Euclid Avenue as well as Corridor 10 - Haven Avenue. This alignment includes 15 transit stations and three park-and-ride lots. Four of the stations studied are optional stations subject to elimination, depending on ridership demand. Exhibit 2-4 shows the corridor and potential alignment.

Exhibit 2-2: E Street Corridor



Corridor 1 - E Street

Omnitrans System-Wide Transit Corridor Plan

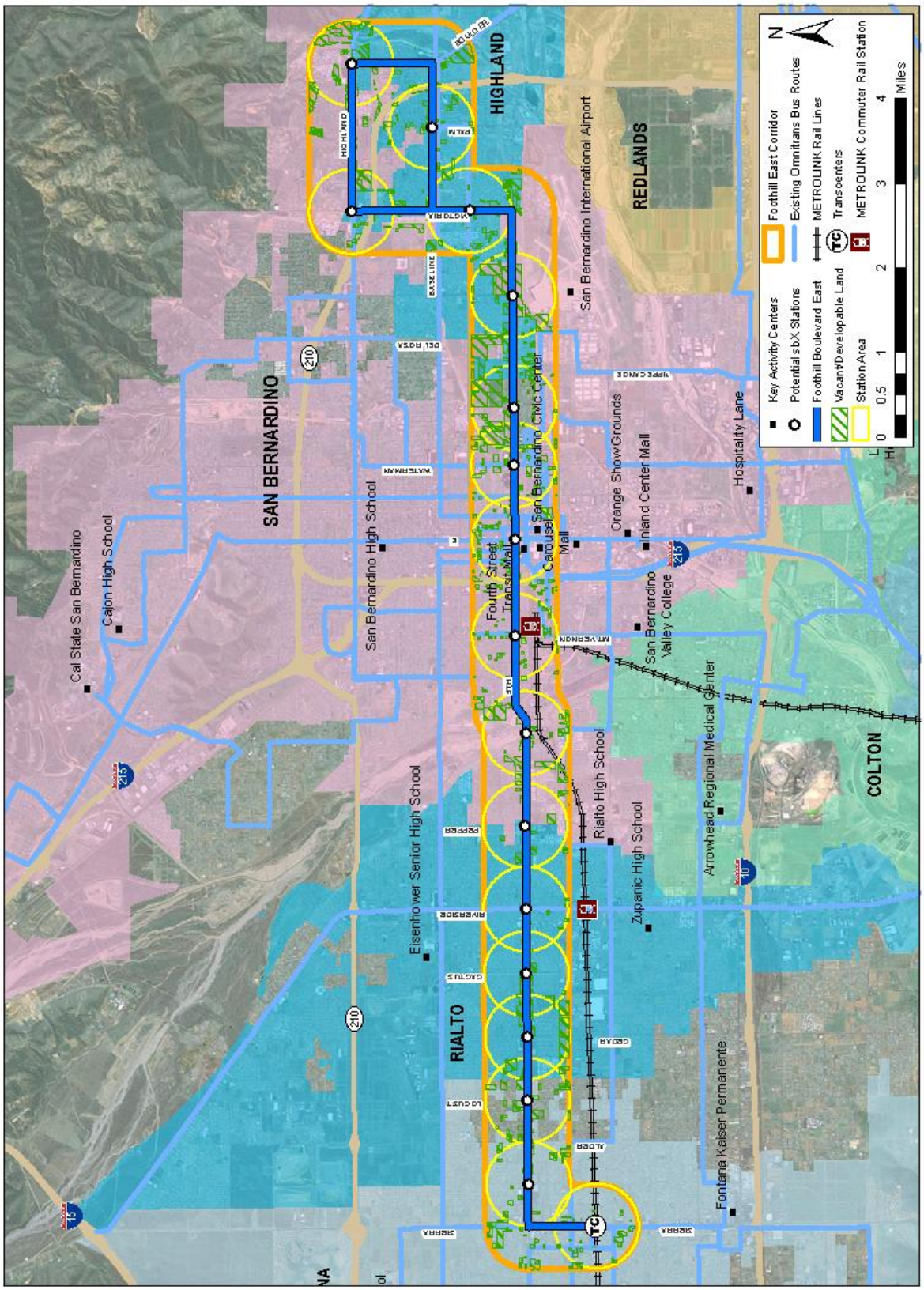
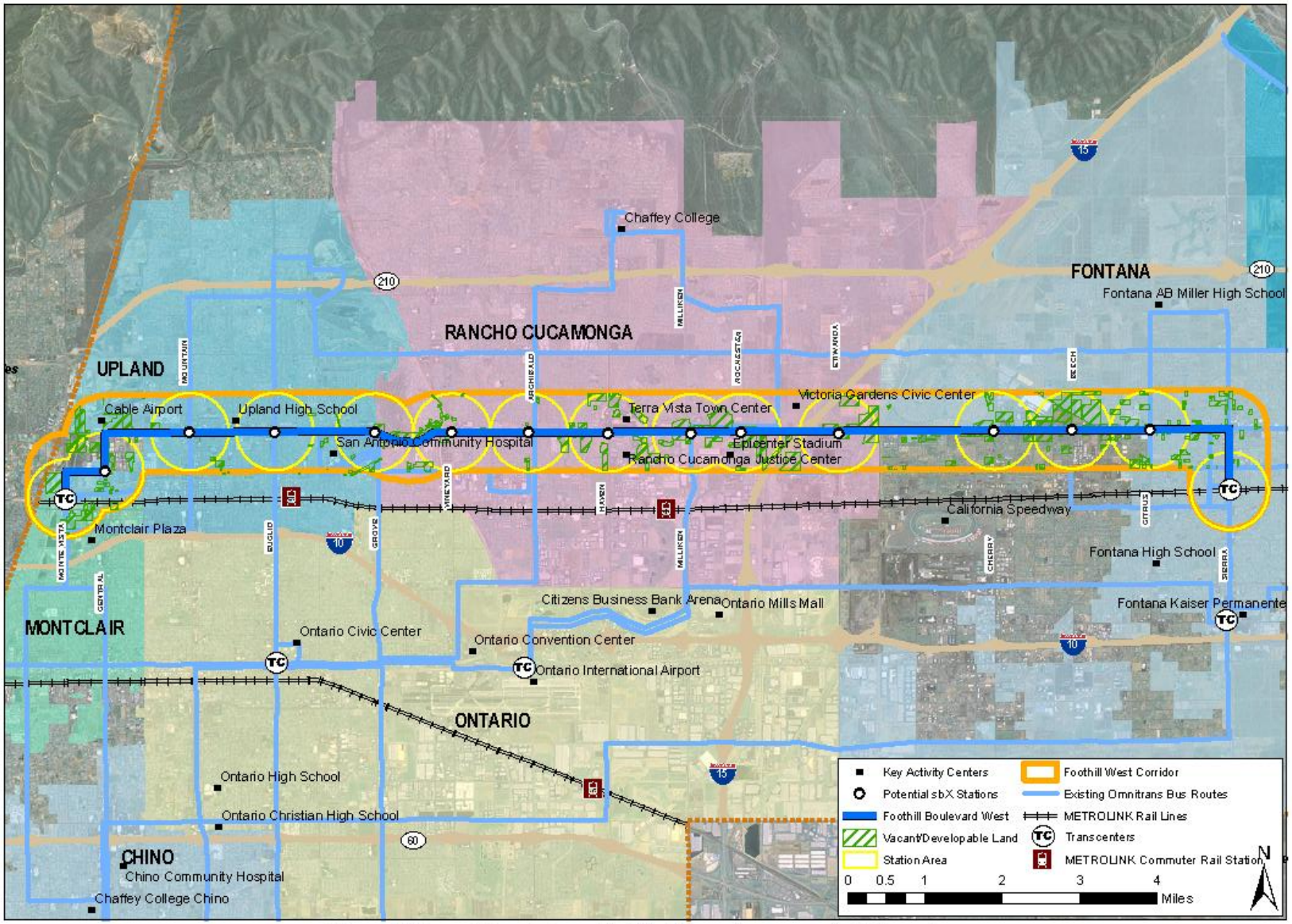


Exhibit 2-3: Foothill Boulevard East



Corridor 3 - Foothill Boulevard West

Omnitrans System-Wide Transit Corridor Plan

Exhibit 2-4: Foothill Boulevard West

Corridor 4: Euclid Avenue

This north/south corridor in the west San Bernardino Valley has been designated as much for its future growth potential as for its current activity. This corridor has three major north/south arterials that could accommodate BRT services: Euclid, Mountain and Central Avenues. The corridor runs from just north of Foothill Boulevard in the north to the Riverside County Line in the south. It includes the agricultural preserve areas in the Cities of Chino and Ontario, which in the coming decades may be developed to house over 100,000 new residents. Current major activity centers in the corridor include Montclair Plaza, Montclair Transcenter, Ontario Civic Center, Ontario Transit Center, and the Chino correctional facilities.

As displayed in Exhibit 2-5, the BRT alignment serving Corridor 4 would travel on Euclid Avenue, the preferred alignment, then transition to SR-71 before continuing south to a possible future transit connection at the Corona Metrolink Station.

Potential Alignment

Three preliminary BRT alignments for Corridor 4 were analyzed as part of SANBAG's LRTP and Euclid Avenue emerged as the strongest alignment. **sbX Route 4** runs north/south with a northern terminal station at Foothill Boulevard. The alignment follows Euclid Avenue south and serves the Ontario Metrolink Station and Ontario Transcenter. The route continues south on Euclid where it crosses Holt Avenue and Corridor 6, and continues through Ontario and Chino where it connects with Corridor 7 - Grand/Edison Avenue to a southern terminal station at SR-71. This 12-mile alignment includes 14 transit stations and three park-and-ride lots. One of the stations is an optional station subject to elimination depending on the model-generated ridership potential.

Corridor 5: San Bernardino Avenue

There are two east/west routes that are being studied to provide BRT service between the western and eastern portions of the San Bernardino Valley: the northern strip that includes Corridors 2 and 3; and the southern strip that includes Corridors 5 and 6. Corridor 5 is centered along San Bernardino Avenue from the South Fontana Transfer Center to the western boundary of the E Street Corridor. This corridor is generally bounded by Randall Avenue on the north and Interstate 10 on the south. Major activity centers include the Arrowhead Regional Medical Center and the Fontana Kaiser Hospital.

Potential Alignment

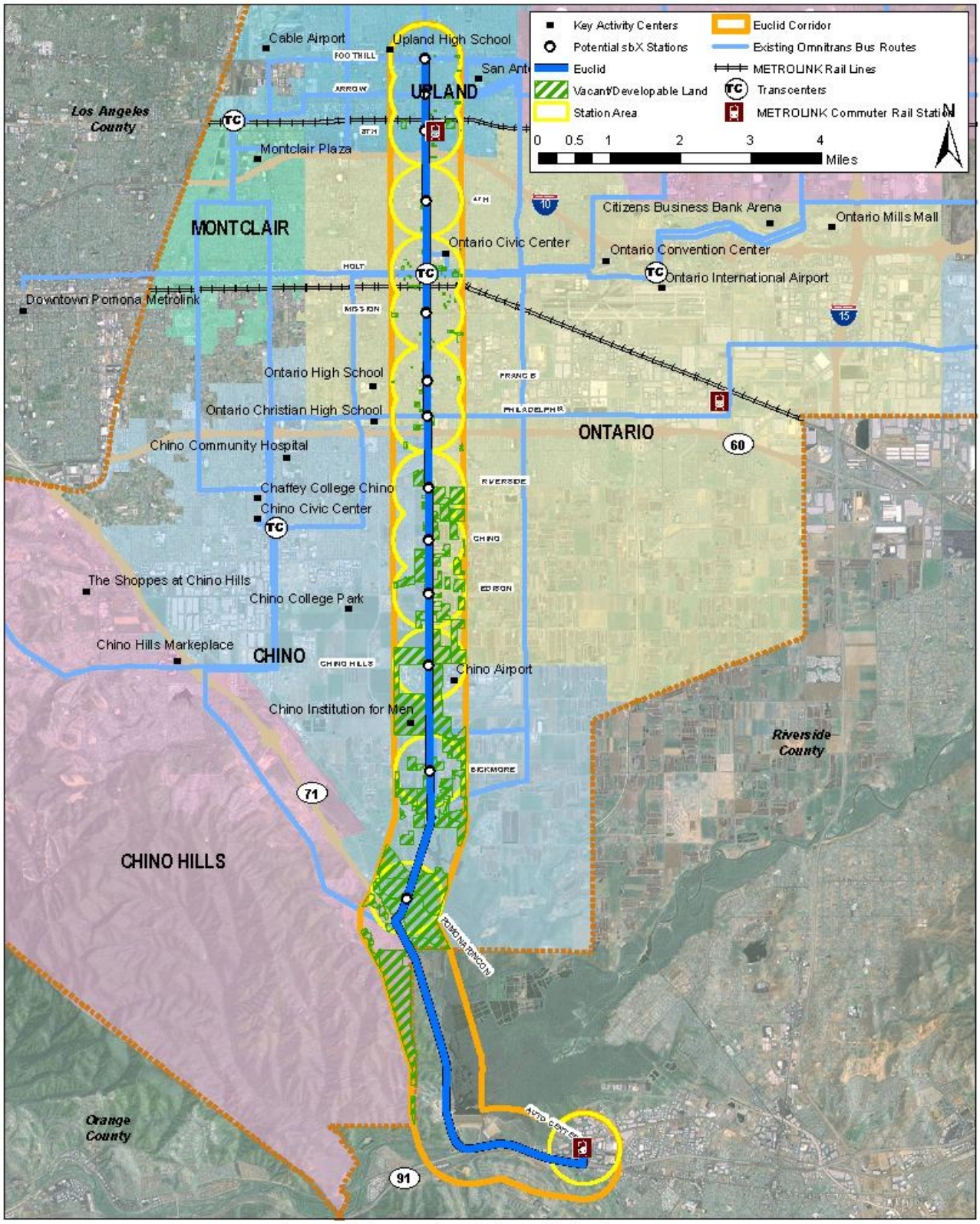
Three alignment alternatives are available to connect Corridor 5 to destinations in the E Street Corridor (Corridor 1). The three Corridor 5 alignments studied include alignments connecting Corridor 5 to downtown San Bernardino; to the Hospitality Lane commercial area; and to the city of Loma Linda. All three alignments use a western terminal station at the South Fontana Transfer Center and travel east on San Bernardino Avenue through the city of Rialto. The routes then transition via Pepper Avenue to Valley Boulevard to La Cadena Drive before diverting to different destinations.

sbX Route 5 is the highest performing route heads east on Valley Boulevard, north on Mount Vernon Avenue, then east on Fairway Drive to Hospitality Lane where it connects with the E Street sbX. From Hospitality Lane the route turns north on Tippecanoe Avenue to a terminal station at the Tippecanoe Avenue Redlands Rail Station. This alignment includes 16 transit stations and one park-and-ride lot. Five of the stations studied are optional stations and three of the stations are also used by the E Street sbX (Corridor 1). This alignment is shown in Exhibit 2-6.

An alternative route diverts north on Mount Vernon Avenue and east on Rialto Avenue to the planned downtown San Bernardino Transit Station and E Street sbX. This 11-mile alignment includes 12 transit stations and one park-and-ride lot. Five of the stations studied are optional stations that are subject to elimination depending on the model-generated ridership potential.

The last alternative route diverts south on La Cadena Avenue, east on M Street, south on Mount Vernon Avenue, east on Washington Street to Barton Road where it connects with the E Street sbX before transitioning north on California Avenue to a terminal at the California Avenue Station of the Redlands Rail line. This

Exhibit 2-5: Euclid Corridor



Corridor 4 - Euclid Avenue

Omnitrans System-Wide Transit Corridor Plan

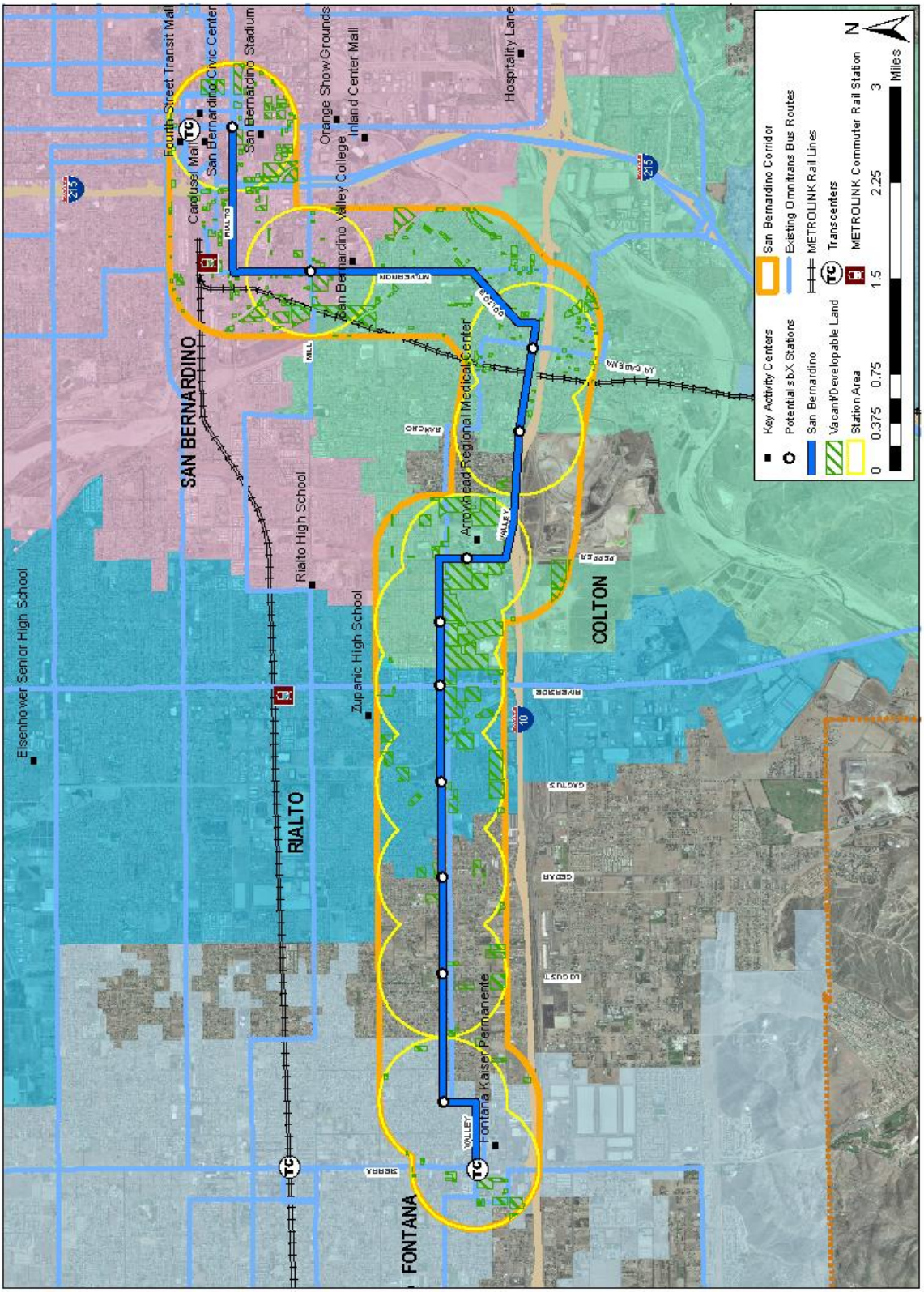


Exhibit 2-6: San Bernardino Ave Corridor

alignment includes 18 transit stations and three park-and-ride lots. Nine of the stations studied are optional stations; four of the stations are also used by the extended E Street sbX (Corridor 1A).

Corridor 6: Holt Avenue/4th Street

This corridor starts at the Pomona Transfer Center in Los Angeles County. Centered along Holt Avenue and 4th Street, the corridor runs from Pomona through Ontario and on to the South Fontana Transcenter. This corridor also connects the north/south corridors of Corridor 4 - Euclid Avenues and Corridor 10 - Haven Avenue. Besides the transit centers mentioned above and Ontario International Airport (ONT), major activity centers in this corridor include the Ontario Convention Center, Ontario Mills Mall and the Ontario Transit Center. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area, into Los Angeles County.

Potential Alignment

sbX Route 6 is an east/west BRT route with a western terminal station at the Pomona Transfer center in Los Angeles County. This route follows Holt Avenue through the cities of Montclair and Ontario to Ontario International Airport where it heads north on Archibald Avenue to Inland Empire Boulevard east and then north on Milliken to east on 4th Street into the city of Fontana where 4th Street changes names to San Bernardino Avenue and the South Fontana Transfer Center. This 19-mile alignment includes 18 transit stations and three park-and-ride lots. Three of the stations are optional stations, subject to elimination depending on the model-generated ridership potential. This corridor and alignment are shown in Exhibit 2-7.

Corridor 7: Grand/Edison Avenues

This east-west corridor south of State Route 60 is essential to connect the future developments in the Agricultural preserves areas with Chino/Chino Hills and possible inter-county transit connections to Los Angeles and Riverside Counties. A likely point of connection will be from the civic center in Chino Hills. Significant development is planned for the preserve areas with over 100,000 new residents expected within 20 years. Activity centers include the Chino Community Hospital, the Chino Civic Center, and the Chino Transfer Center. This corridor crosses Corridor 4 -Euclid Avenues and Corridor 10 - Haven Avenue. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area into Riverside County.

Potential Alignment

sbX Route 7 is an east/west BRT route with a western terminal station at the Chino Hills Civic Center. This route follows Grand Avenue across SR-71, heads north on Pipeline Avenue, east on Chino Avenue, and south on Central Avenue before continuing east on Edison Ave. through the agricultural preserve areas of Chino and Ontario. This alignment eventually heads south via Milliken Avenue and to Limonite Avenue and the Limonite Shopping center in Riverside County where a terminal station is located. This 16-mile alignment includes 15 transit stations and three park-and-ride lots. Two of the stations are optional stations, subject to elimination depending on ridership potential. This corridor and alignment are shown in Exhibit 2-8.

Corridor 8: Sierra Avenue

This new north/south corridor, not analyzed in the previous System-Wide Plan but included in the recent SANBAG LRTP, lies entirely within the City of Fontana, serving the Fontana Metrolink Station, South Fontana Transfer Center, and Kaiser Hospital.

Potential Alignment

sbX Route 8 is a north/south BRT route with a northern terminal station at a park-and-ride lot near Interstate 15. This route follows Sierra Avenue through Fontana to a southern terminal station at Kaiser Hospital. This 7-mile alignment (the shortest alignment studied) includes 7 transit stations and three park-and-ride lots. The alignment serves as a spine connecting all four Cross Valley Corridors on Foothill Boulevard and San Bernardino Avenue. Two of the stations are optional stations, subject to elimination depending on ridership potential. This corridor and alignment are shown in Exhibit 2-9.

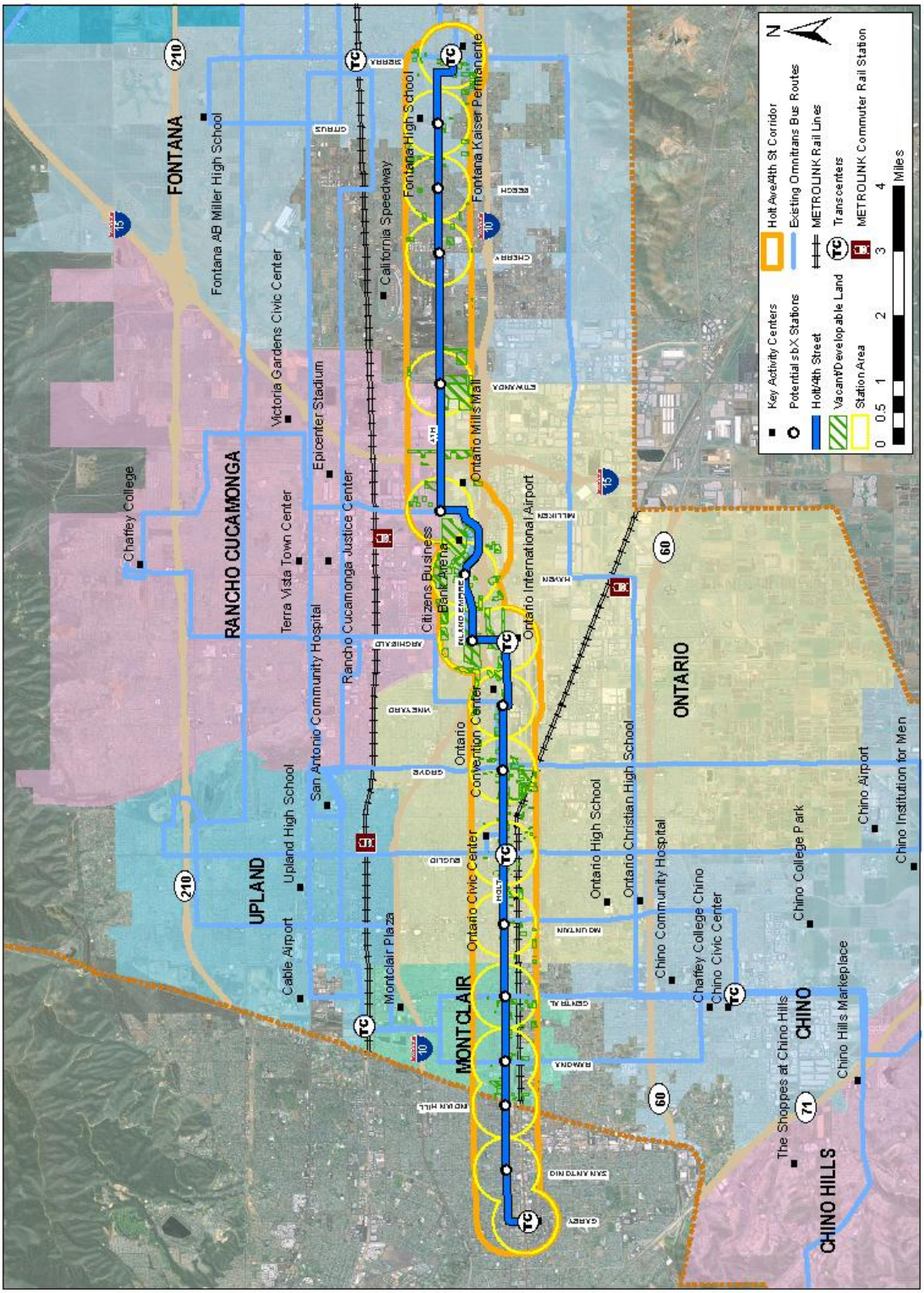
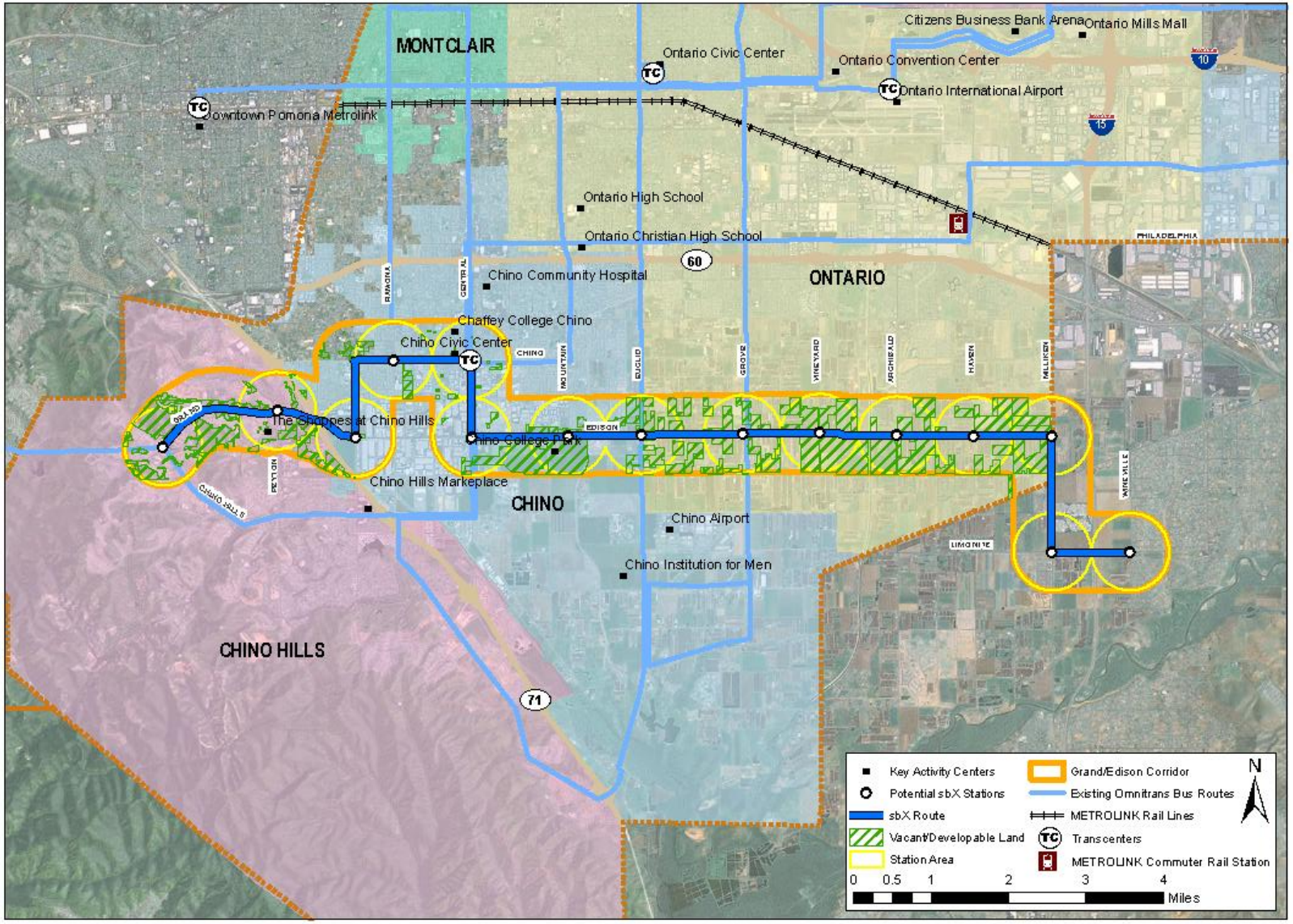


Exhibit 2-7: Holt Avenue/ 4th Street Corridor

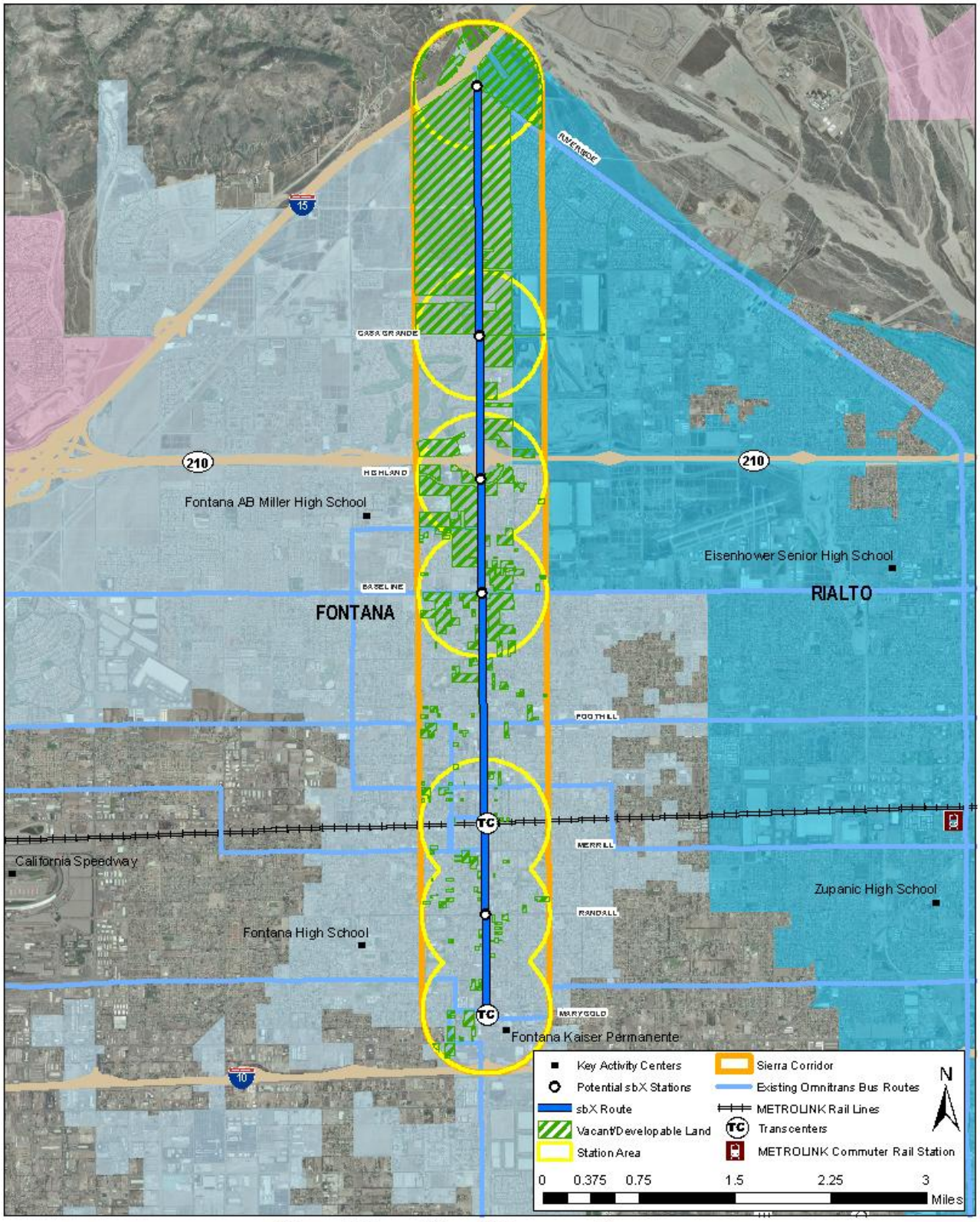


Corridor 7 - Grand/Edison Avenues

Omnitrans System-Wide Transit Corridor Plan

Exhibit 2-8: Grand/Edison Corridor

Exhibit 2-9: Sierra Corridor



Corridor 8 - Sierra Avenue

Omnitrans System-Wide Transit Corridor Plan

Corridor 9: Riverside Avenue

This north/south corridor, not analyzed in the previous System-Wide Plan but included in the recent SANBAG LRTP, lies primarily within the City of Rialto extending south into Riverside County and the City of Riverside. This corridor serves the Rialto Metrolink Station and the RTA Downtown Terminal in Riverside. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area, into Riverside County.

Potential Alignment

sbX Route 9 is a north/south BRT route with a northern terminal station at a park-and-ride lot near Interstate 15 and Sierra Avenue. This route follows Riverside Avenue Southwest and then south through the city of Rialto and then across the Riverside County line where Riverside Avenue changes names to Main Street to the RTA Downtown Terminal in Riverside. This Corridor connects with Corridor 2 - Foothill Boulevard East and Corridor 5 - San Bernardino Avenue. This 16-mile alignment includes 15 transit stations and three park-and-ride lots. Several of the stations are optional, subject to elimination depending on ridership potential. This corridor and alignment are shown in Exhibit 2-10.

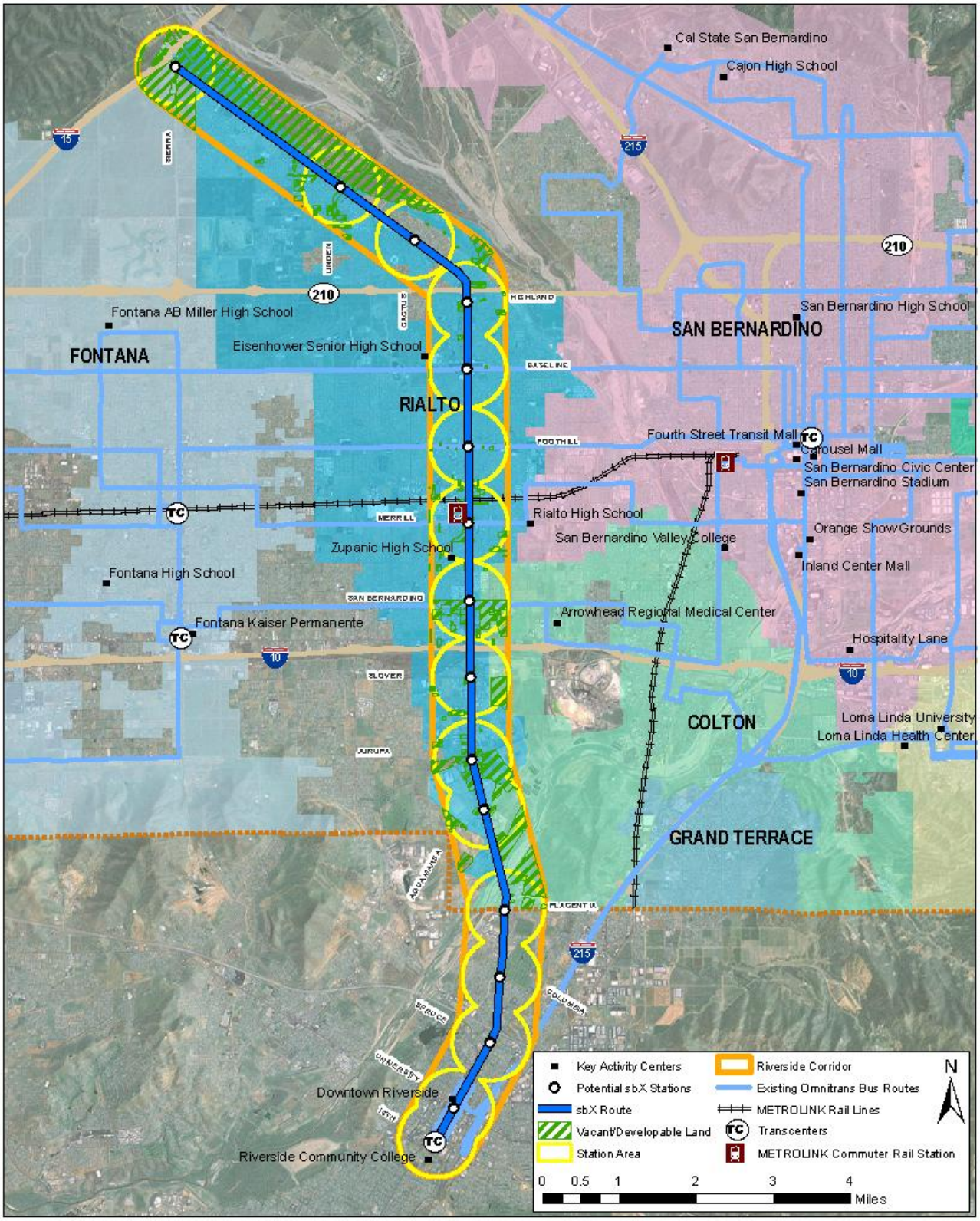
Corridor 10: Haven Avenue

This north/south corridor, not analyzed in the original System-Wide Plan but included in the recent SANBAG LRTP, lies within the Cities of Rancho Cucamonga, Ontario and Chino. This corridor serves Chaffey College at the northern Terminus, the Rancho Cucamonga and the East Ontario Metrolink Station, the Terra Vista Town center, the Ontario airport and would end at Edison Avenue where it joins sbX Route 7.

Potential Alignment

sbX Route 10 is a north/south BRT route with a northern terminal station at the park-and-ride lot at Chaffey College north of Interstate 210. This route follows Haven Avenue south, past the Terra Vista Shopping Center and Corridor 3 - Foothill Boulevard West, with a connection at the Rancho Cucamonga Metrolink Station and into Ontario. In the city of Ontario it connects to Corridor 6, Holt Avenue/4th Street and then south to the East Ontario Metrolink Station to Edison Avenue where it connects to Corridor 7 - Grand/Edison Avenue. The 10.4 mile corridor has 9 stations, 3 park-and-rides lots and two connections to Metrolink lines. This corridor and alignment are shown in Exhibit 2-11.

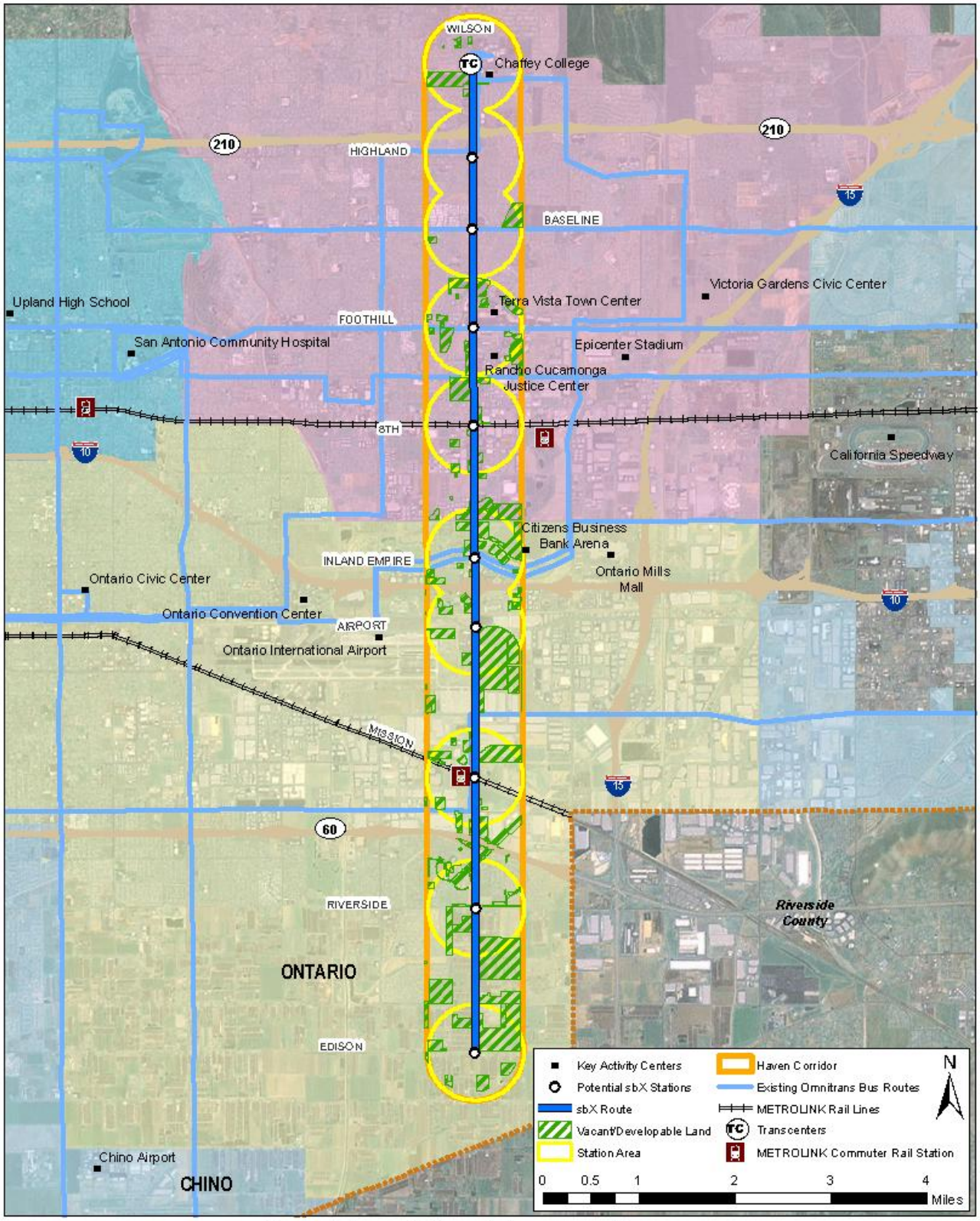
Exhibit 2-10: Riverside Avenue Corridor



Corridor 9 - Riverside Avenue

Omnitrans System-Wide Transit Corridor Plan

Exhibit 2-11: Haven Avenue Corridor



Corridor 10 - Haven Avenue

Omnitrans System-Wide Transit Corridor Plan

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Chapter 3 Existing Conditions

This chapter describes the existing conditions in the Omnitrans service area that affect the existing and potential future transit ridership. All of the material presented here is summarized to describe the variations between the BRT corridors.

Population and employment data are presented to show where person trips are generated. The demographic data identifies populations and geographic areas that are more likely to consider transit modes of travel. Traffic conditions are shown to identify areas of congestion, which present both a challenge and opportunities for increased transit service. Land use data and policies are used to demonstrate the presence or absence of transit-oriented development patterns, and provide current and planned levels of development in the corridors. Existing transit conditions are discussed as a key requirement of the Very Small Starts process.

3.1 Existing Demographic Profile

This section presents demographic data for the San Bernardino Valley, for the ten BRT corridors, and for current transit riders. Existing demographic data is derived from the San Bernardino Valley Travel Demand Focus Model, described in detail in Chapter 4. The demographic ridership data shown in Table 3-1 for current transit riders are used to demonstrate how the existing conditions contribute to existing transit ridership.

3.1.1 Corridor Demographics

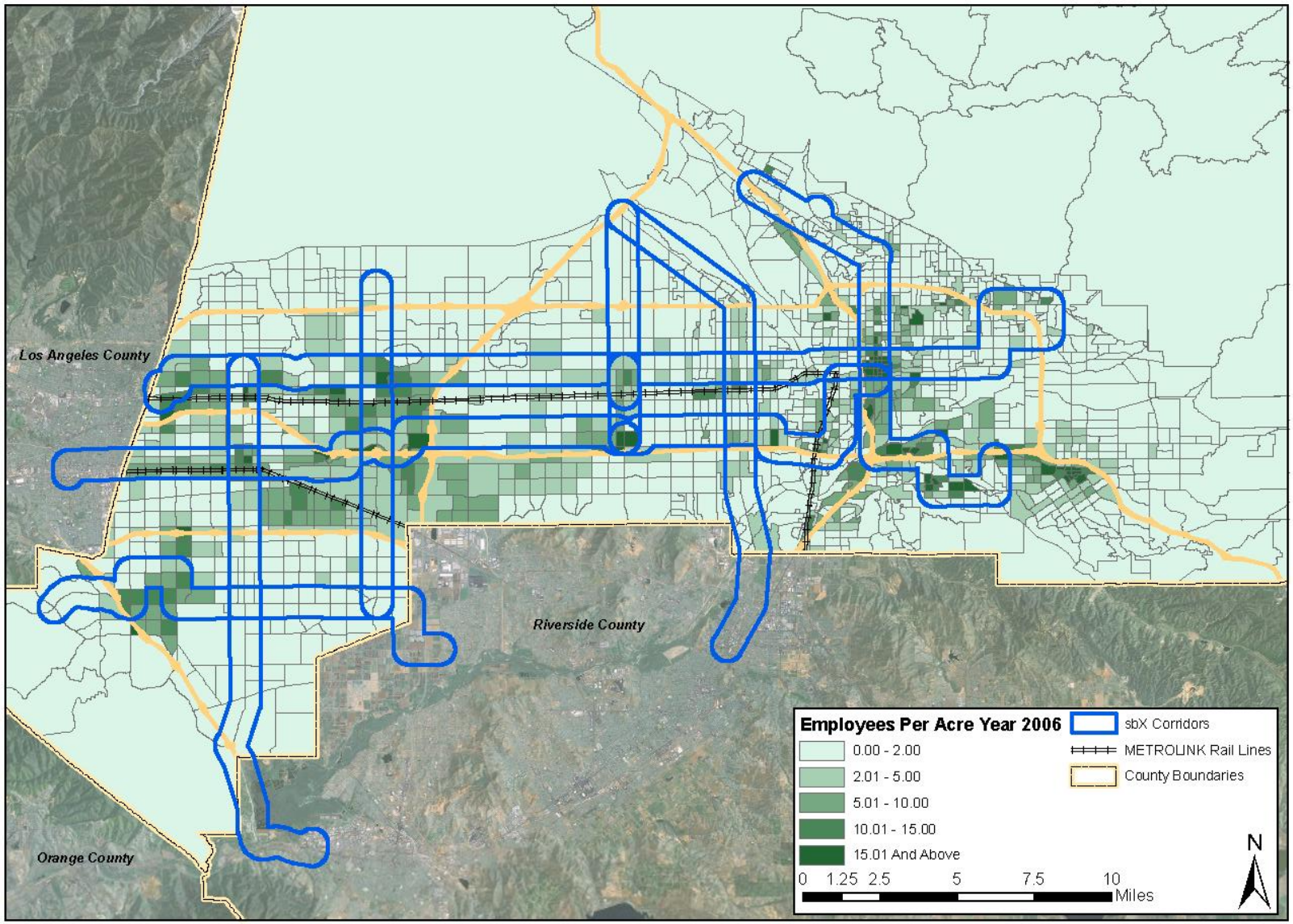
Year 2006 levels of employment and population densities were analyzed as part of the LRTP, and are shown in Exhibits 3-1 and 3-2, respectively. A wide range of demographic information was analyzed for the various major transit corridors as shown in Table 3-1, as well as for the overall Omnitrans service area. The following statistics were selected because they are indicators of potential transit usage in an area and gauge potential transit opportunities.

In general, transit corridors that serve a mix of high population and employment densities are more likely to generate more transit trips in the corridor. Additional transit trips are attracted to corridors that have certain socio-economic characteristics, such as low income and low levels of vehicle availability.

- **Population and Population Density.** Table 3-1 shows that the population of the Omnitrans service area is almost 1.46 million people, as of 2006. The ten corridors studied serve populations ranging from 70,000 to 215,000 people. Three corridors (Corridors 2, 3 and 6) each serve at least 10% of the population of the Omnitrans service area, while two other corridors (Corridors 7 and 8) each serve about 5% of the population. The total population is divided by the total land area in each corridor to calculate the population density. The average population density of the Omnitrans service area is almost 3,000 persons per square mile. Every corridor with the exception of Corridor 7 has a greater population density than the average value. Corridor 2 has both the greatest total population and the highest population density.
- **Minority Population.** Minority (defined as all persons not considered non-Hispanic white) populations are high throughout the ten corridors and the Omnitrans service area in general at 63%. The minority populations observed in the individual corridors range from 53% in Corridor 10, up to almost 80% in Corridor 5.
- **Age Distribution.** Young people and the elderly are less likely to drive or have cars. The age distribution in all of the corridors is typically very young, with almost half of the population in Corridor 1 (E Street) and Corridor 2 (Foothill Boulevard East) being of college age or younger.
- **Poverty Status.** Lower incomes are often correlated with transit usage. Overall, almost 16% of the population in the Omnitrans service area has incomes below the poverty level. However, poverty levels in individual corridors vary widely, from higher concentrations of more than 25% in Corridor 1 and 28 percent in Corridor 2 to the lowest concentration of 8% in Corridor 7.

Table 3-1: Demographic Comparison of Corridors

	Corridor 1: E Street	Corridor 2: Foothill East	Corridor 3: Foothill West	Corridor 4: Mountain / Euclid	Corridor 5: San Bernardino Ave.	Corridor 6: Holt / 4th	Corridor 7: Grand / Edison	Corridor 8: Sierra	Corridor 9: Riverside	Corridor 10: Haven	Omnitrans Service Area
Corridor Length Linear Miles[2]	18.3	16.6	16.2	17.9	11.0	20.4	17.4	7.6	16.4	10.4	
Total Area Square Miles	37.2	36.4	33.8	26.7	24.1	35.5	27.6	17.1	26.6	23.9	488.5
Population (2006)											
Persons	135,229	215,421	186,113	136,209	115,407	154,328	70,384	77,670	95,801	84,759	1,458,991
Persons/Total Square Mile	3,638	5,924	5,499	5,099	4,792	4,348	2,546	4,541	3,608	3,554	2,986
Persons/ Residential Square Mile	10,087	11,677	12,077	12,679	10,786	13,689	10,877	11,547	10,600	11,562	9,566
Minority Population% Minority	67.1%	76.1%	63.4%	66.4%	79.8%	79.3%	65.3%	76.0%	77.3%	52.6%	63.0%
Age											
% 13 and Under	25.9%	29.0%	25.1%	23.7%	28.7%	27.9%	23.9%	29.5%	28.2%	23.1%	25.4%
% 14 to 17 (High School Age)	6.2%	7.1%	6.5%	6.0%	7.2%	6.8%	6.9%	6.8%	7.7%	6.8%	6.9%
% 18 to 24 (College Age)	11.9%	10.9%	11.3%	11.3%	11.0%	11.6%	10.2%	10.8%	10.2%	10.6%	10.3%
% 65 and Over	8.3%	7.1%	6.6%	7.2%	7.4%	6.2%	4.4%	5.9%	6.6%	5.1%	7.4%
Employment (2006)											
% Below Poverty Line	25.8%	26.3%	15.5%	15.4%	23.3%	21.2%	6.7%	19.7%	17.4%	7.1%	15.8%
Number of Jobs	90,014	61,941	78,755	36,545	59,739	99,916	39,798	24,024	20,856	50,743	555,357
Jobs/Square Mile	2,422	1,703	2,327	1,368	2,481	2,815	1,440	1,405	785	2,127	1,137
Mode to Work											
% Using Public Transit	2.8%	3.0%	2.6%	2.8%	2.9%	3.1%	1.9%	2.5%	2.5%	2.2%	2.2%
% Using Commuter Rail (Of All Workers)	0.3%	0.3%	0.7%	0.6%	0.6%	0.4%	0.8%	0.6%	0.7%	1.2%	0.6%
% Carpool	18.2%	22.4%	17.2%	20.3%	22.8%	24.2%	15.7%	19.9%	20.0%	13.0%	17.6%
% Drive Alone	70.4%	68.0%	74.5%	71.1%	66.9%	66.7%	76.3%	71.7%	73.0%	80.4%	74.2%
Vehicle Ownership											
% Zero-Vehicle Units	15.3%	15.2%	7.6%	8.8%	13.8%	11.3%	3.8%	10.0%	8.8%	3.9%	8.4%
% One-Vehicle Units	38.7%	38.2%	36.4%	31.9%	34.7%	35.6%	21.4%	33.1%	32.1%	30.6%	31.7%
% Two or More-Vehicle Units	46.1%	46.6%	56.0%	59.2%	51.5%	53.0%	74.8%	56.9%	59.1%	65.5%	60.0%
Housing											
% Multifamily	25.8%	27.9%	36.3%	26.2%	17.9%	30.8%	15.9%	20.2%	18.2%	37.4%	24.5%
Housing Units / Total Acre	1.77	2.49	2.57	2.11	1.98	1.70	1.00	1.83	1.42	1.73	1.33
Housing Units / Residential Acre	4.81	4.66	5.18	5.05	4.25	5.11	4.27	4.29	3.92	4.91	3.93



Existing Employment Density

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 3-1: San Bernardino Valley Employment Density

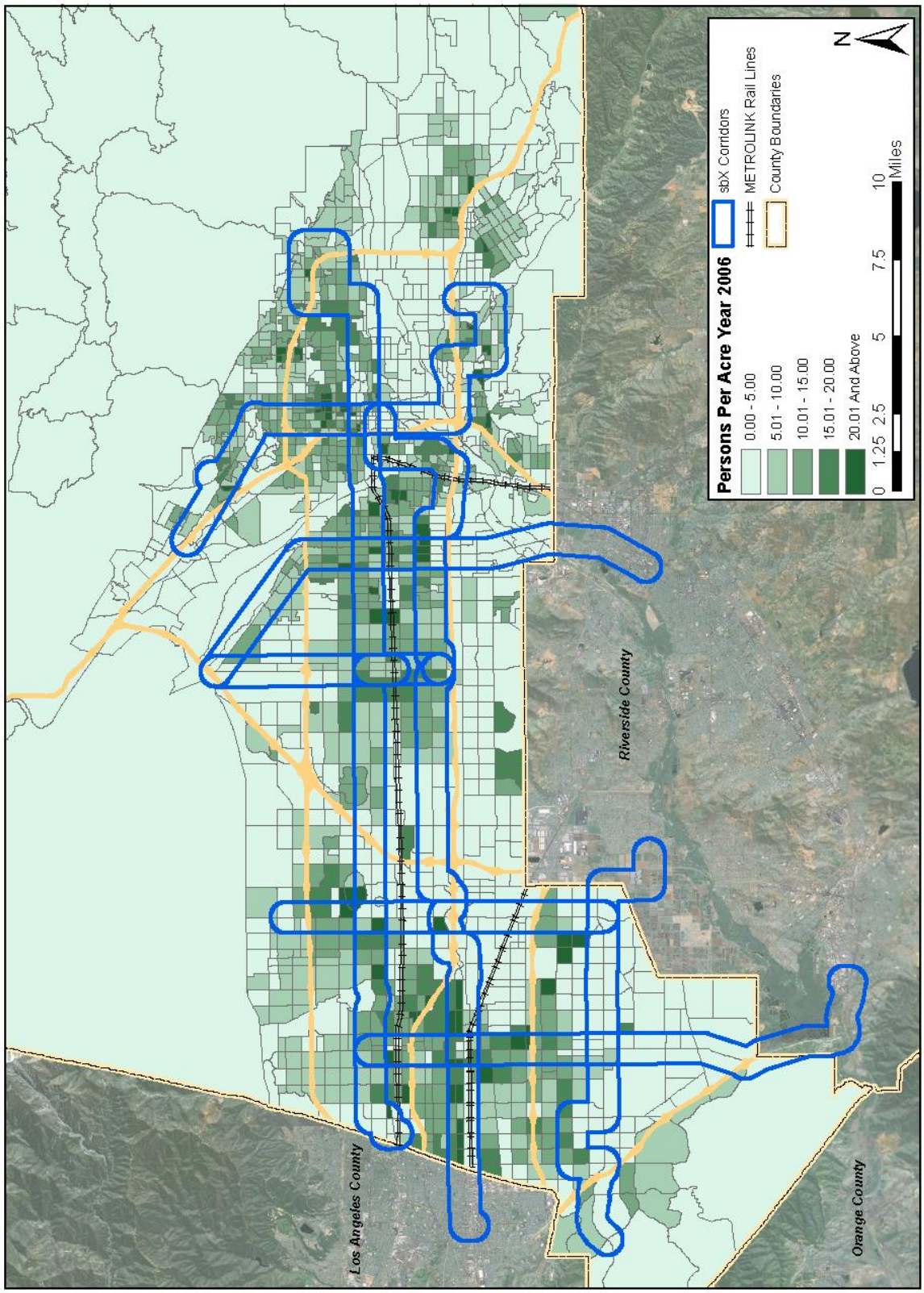


Exhibit 3-2: San Bernardino Valley Population Density

3.2 Traffic Conditions

Existing

Generally, regional traffic patterns in the major transit corridors exhibit very definite spatial and temporal characteristics. For the most part, typical weekday traffic flows tend to be from east to west through the study area during the morning peak period (6:00 – 8:30 AM) and from west to east during evening commute hours (3:30 – 6:30 PM). The east to west travel pattern in the morning peak is a result of heavy commuting from San Bernardino County to destinations in Los Angeles and Orange Counties.

As shown in Exhibit 3-3, the most congested arterial street intersections and roadway segments during traffic peaks occur near freeway on and off ramps of the I-10, I-15, SR-30, I-215, and I-210 freeways. Existing volume to capacity (v/c) ratios in the traffic peaks are approximately at 1.0 or greater in the vicinity of Tippecanoe/I-10, Waterman/I-10, Mount Vernon/I-10, Pepper/I-10, and Euclid/I-10, among other locations in proximity to freeway ramps. This means those facilities are operating at a poor level of service and travelers experience significant travel time delay.

Heavy peak period traffic volumes also occur close to major activity centers in the seven transit corridors. Some of these major activity centers include:

- Loma Linda University / Medical Center;
- Central San Bernardino and Civic Center Area;
- California State University - San Bernardino;
- Arrowhead Regional Medical Center;
- Ontario Airport Commercial Area;
- Ontario International Airport;
- Veterans Hospital in Loma Linda;
- Ontario Mills Shopping Center; and
- Montclair Plaza.

These heavy traffic locations during the morning and evening peak periods are affecting certain bus runs on a number of existing Omnitrans routes such as Routes 2, 4, 8, 9, 10, 14, and 61. Traffic congestion in the vicinity of I-10 on arterials such as Tippecanoe and Waterman can slow buses and affect their on-time performance.

Average Daily Traffic (ADT) volumes on major arterial roadways in the transit corridors range widely. The highest ADTs (30,000 vehicles or greater) on arterials occur in Transit Corridor 1 (E-Street) on Waterman, Hospitality Lane, and Tippecanoe just north and south of the I-10 freeway.

3.3 Land Use Plans and Policies

3.3.1 Existing Land Use Patterns

As shown in Exhibit 3-4, SCAG's existing land use is shown for the San Bernardino Valley. Each transit corridor has a unique pattern of land uses that shapes the type and intensity of transit usage along the corridor. In general, a diverse mixture of land uses along a corridor tends to increase the amount of travel between uses. The overall Omnitrans service area encompasses a wide range of land use types, including low and medium-high density residential development, commercial and office development, a substantial amount of industrial uses, and agricultural land, as well as public facilities, open space, transportation infrastructure, and vacant land.

Table 3-2 provides existing land use data for each corridor, expressed as a percentage of the entire corridor. Due to the many varied existing land use types in the SCAG data, table 3-2 provides an agglomeration of the SCAG land use categories. Land use types with less than one/half percent of the total corridor size were removed from the analysis.

Corridor 1 E Street with the extension contains an even mix of existing land uses. 26% of the corridor is single family residential. 20% of the corridor is vacant. Remaining uses are less than 10% by category.

Corridor 2 - Foothill Boulevard East has the highest percentage of single family homes, with 35% of the corridor currently this land use. The corridor also contains the highest percentage of land used for transportation purposes at 14%, due to the proximity of the San Bernardino Internal Airport and Rialto Municipal Airport. 14% of the corridor is vacant.

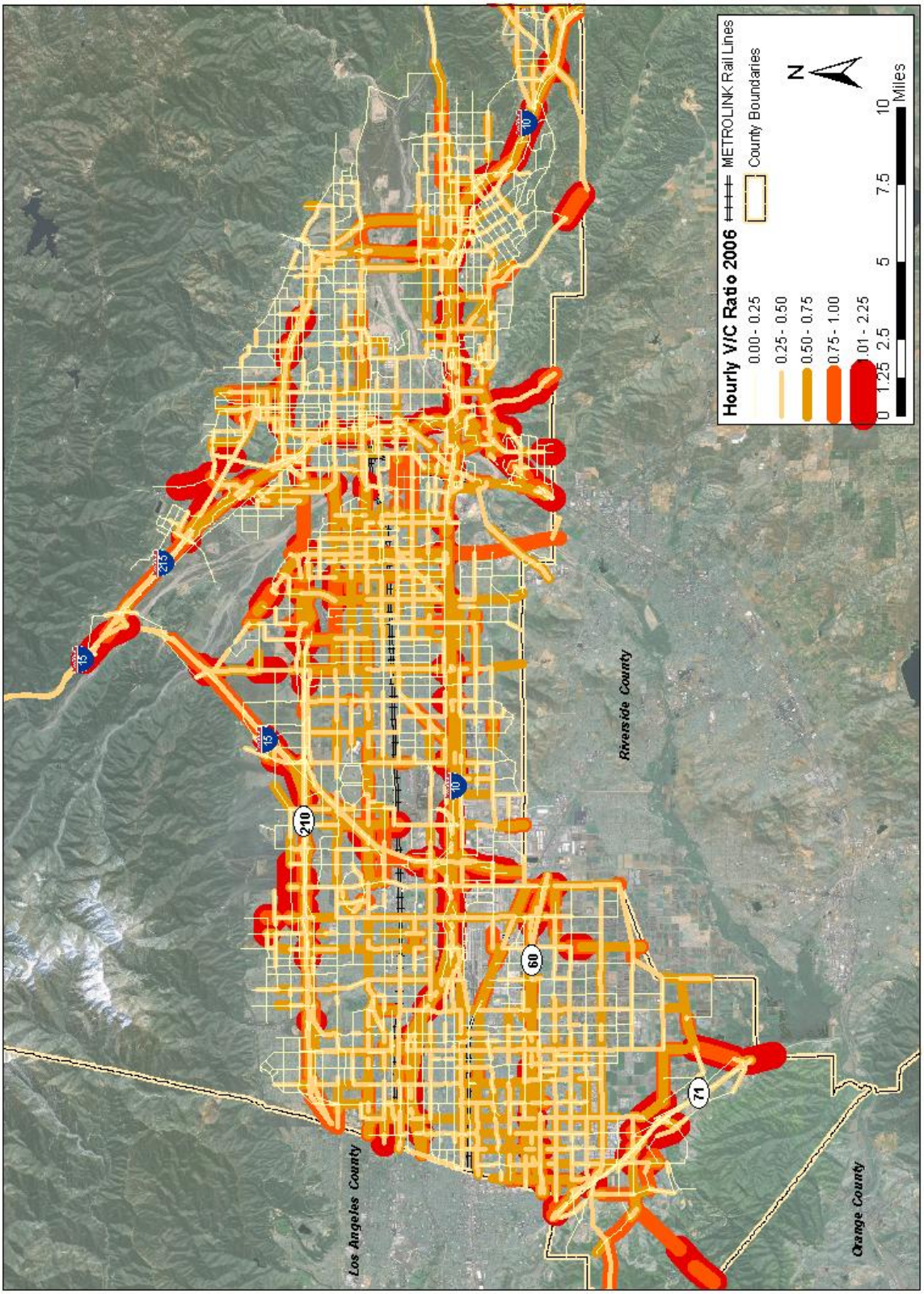


Exhibit 3-3: Existing Traffic Congestion

Table 3-2: Existing Land Use Patterns[1]

	Corridor 1: E Street	Corridor 2: Foothill East	Corridor 3: Foothill West	Corridor 4: Euclid	Corridor 5: SB	Corridor 6: Holt	Corridor 7: Grand	Corridor 8: Sierra	Corridor 9: Riverside	Corridor 10: Haven
Airports and Transportation	1%	14%	2%	3%	9%	12%	0%	2%	4%	6%
Agriculture and Dairy	4%	0%	0%	27%	0%	0%	44%	0%	0%	17%
Schools and Universities	6%	2%	3%	2%	4%	3%	2%	2%	1%	6%
Commercial Recreation	3%	0%	1%	2%	2%	6%	0%	3%	2%	0%
Correctional Facilities	0%	0%	0%	1%	0%	1%	1%	0%	0%	0%
Utilities	9%	4%	5%	0%	2%	3%	1%	5%	4%	2%
Government Offices	0%	1%	1%	0%	0%	0%	0%	0%	0%	1%
Low-Medium Rise Major Office	4%	2%	2%	0%	1%	2%	0%	0%	0%	6%
Retail Centers	3%	2%	6%	1%	3%	3%	2%	3%	1%	2%
Strip Development	4%	4%	5%	2%	4%	4%	0%	3%	1%	1%
Major Medical Health Care	1%	2%	0%	0%	2%	1%	0%	1%	0%	0%
High Density Single Family	26%	35%	27%	23%	31%	15%	13%	22%	20%	17%
Low Density Single Family	2%	4%	5%	2%	7%	3%	3%	6%	2%	1%
Low-Rise Apartments	4%	4%	9%	2%	2%	4%	1%	2%	2%	3%
Rural Residential Low Density	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%
Trailer Park High Density	0%	4%	2%	0%	2%	0%	0%	0%	1%	1%
Vacant	20%	14%	14%	17%	13%	11%	13%	40%	44%	16%
Manufacturing	4%	2%	4%	1%	5%	14%	6%	1%	5%	6%
Mineral Extraction	0%	0%	2%	0%	5%	0%	0%	0%	3%	0%
Open Storage	0%	0%	2%	0%	1%	4%	0%	0%	3%	1%
Parks & Recreation	1%	2%	2%	6%	1%	1%	2%	1%	0%	1%
Religious Facilities	1%	1%	1%	1%	1%	0%	0%	1%	0%	0%
Under Construction	2%	0%	1%	3%	0%	1%	1%	1%	1%	1%
Wholesaling & Warehousing	1%	1%	4%	2%	0%	7%	5%	3%	2%	10%
Totals	96%	98%	98%	95%	95%	95%	95%	97%	96%	98%

[1]Land use analysis only for portions of the corridor within San Bernardino County. Some Land use types aggregated from similar categories.

Corridor 3 - Foothill Boulevard West has 27% of the corridor currently used as single family homes. Vacant land is available on more than 14% of the corridor, and there is approximately 10% of the land currently used for retail centers or strip development, the highest percentage among the corridors. 9% of the corridor is low rise apartments, also the highest among the corridors.

Corridor 4 - Euclid Avenue's existing land use is: 23% single family homes, 27% agricultural, cropland or dairy farm, and 17% is identified as vacant.

Corridor 5 - San Bernardino Avenue contains a higher percentage of single family homes than the previous two corridors at 31%, and contains 7% low density single family. 5% of the land uses in the corridor is dedicated to mineral extraction and another 17% is designated as vacant. 9 percent of the corridor is used by railroads and other transportation uses.

Corridor 6 - Holt Avenue/ 4th Street contains a relatively even mix of uses with 15% currently being used as single family, 12% by the Ontario airport and other transportation uses, 11% vacant, and 14% manufacturing or metal processing the highest among the corridors.

Corridor 7 - Grand Avenue/Edison Avenue contains 44% agriculture, dairy or irrigated cropland, the highest among the corridors. 13% is single family homes the lowest out of all the corridors. 6% is manufacturing and 13% is vacant.

Corridor 8 - Sierra Avenue includes 22% single family homes, 40% vacant the second highest among the corridors. Remaining uses account for less than 6% by category.

Corridor 9 - Riverside Avenue is 20% single family, and 44% vacant, the highest vacancy rates among the corridors. Remaining uses account for less than 5% by category.

Corridor 10 - Haven Avenue has 17% of the corridor dedicated to single family homes. 10% of the corridor is used for wholesaling or warehousing, 16% is vacant, and 17 % is used as agriculture, dairy or cropland.

3.3.2 General Plan Land Use

General plan land use is displayed in Exhibit 3-4 for the San Bernardino Valley. Table 3-3 provides SCAG's planned land use data for each corridor, expressed as a percentage of the entire corridor.

Residential planned land use for each transit corridor ranges from approximately 40-60% of the corridor with the exception of Corridor 6 - Holt Avenue/4th Street which a slight majority, 26% of the corridor, is planned for general industrial usage, due to its location near the Ontario Airport. Overall, Corridor 6 - Holt Avenue/4th Street has the most even mix of planned land uses.

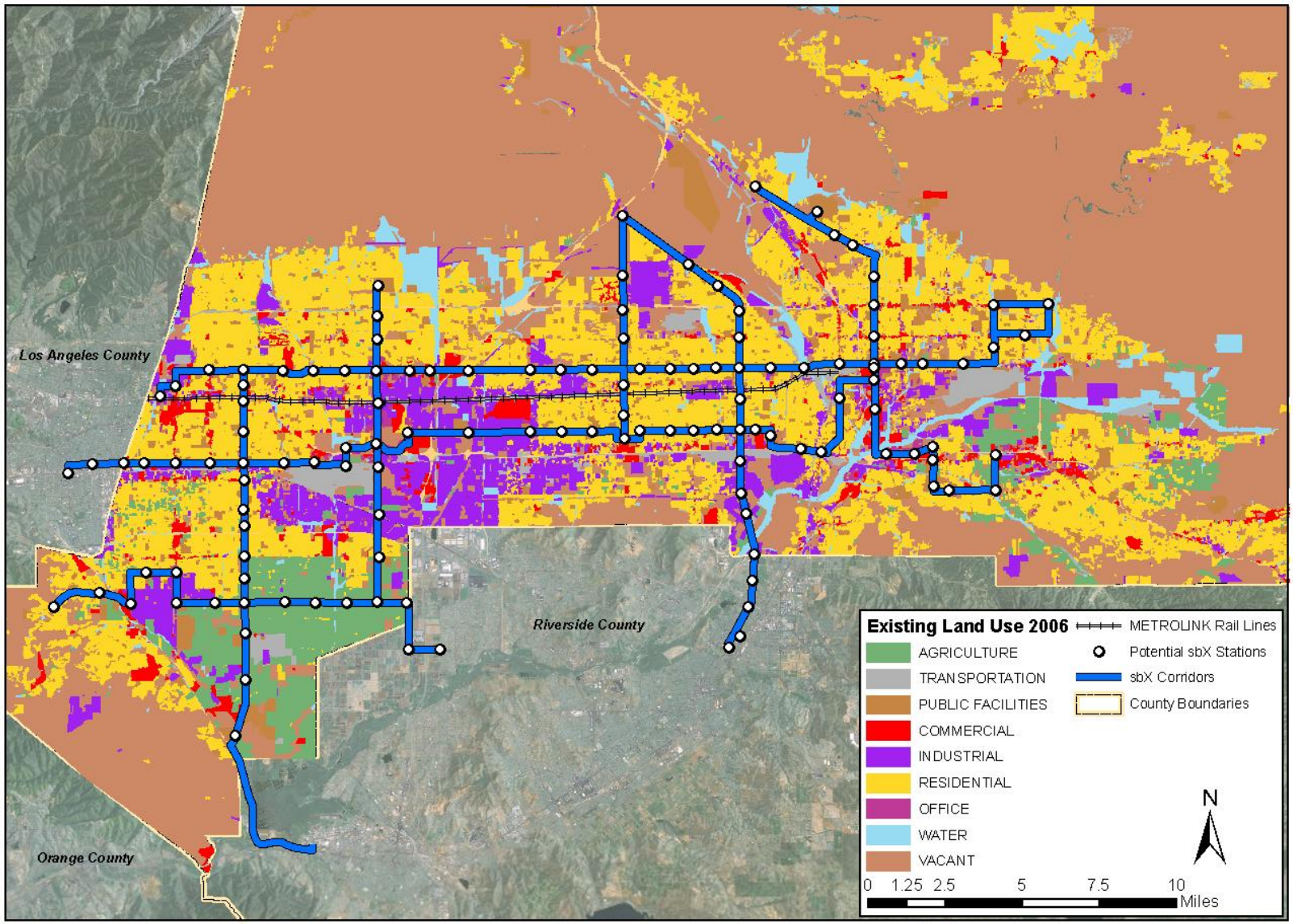
The planned commercial areas of the county are reflected in Corridor 2 - Foothill East and Corridor 10 as they have the highest percentages of General Commercial, and Corridor 1 - E Street and Corridor 6 - Holt Avenue/4th Street have the highest percentages of regional commercial planned usage.

Due to the proximity of the Agricultural preserve in the cities of Chino and Ontario, Corridor 4 - Mountain Avenue/ Euclid Avenue and Corridor 7 - Grand Avenue/ Edison Avenue have planned open or non-developed area at 14 and 21%, respectively.

3.4 Land Use Plans and Policies Survey

In addition to the land use patterns discussed in Section 3.3, a land use survey of existing plans and policies in current General and Specific Plans was prepared in May of 2009 for cities served by the sbX corridors. The survey was prepared in conjunction with SANBAG for the LRTP. A review of the cities' general plans, many in various states of revision, was prepared to gauge the cities' current policies on transit as preparation for engaging the cities in the LRTP planning process.

The result of the survey is summarized in Table 3-4 below and is included in Appendix A. The survey was prepared to identify policies that may be in place that would assist in the development of TOD's and support transit. Mixed use designations were identified to identify cities that have policies that support mixed use



Existing Land Use

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 3-4: Existing Land Use Patterns

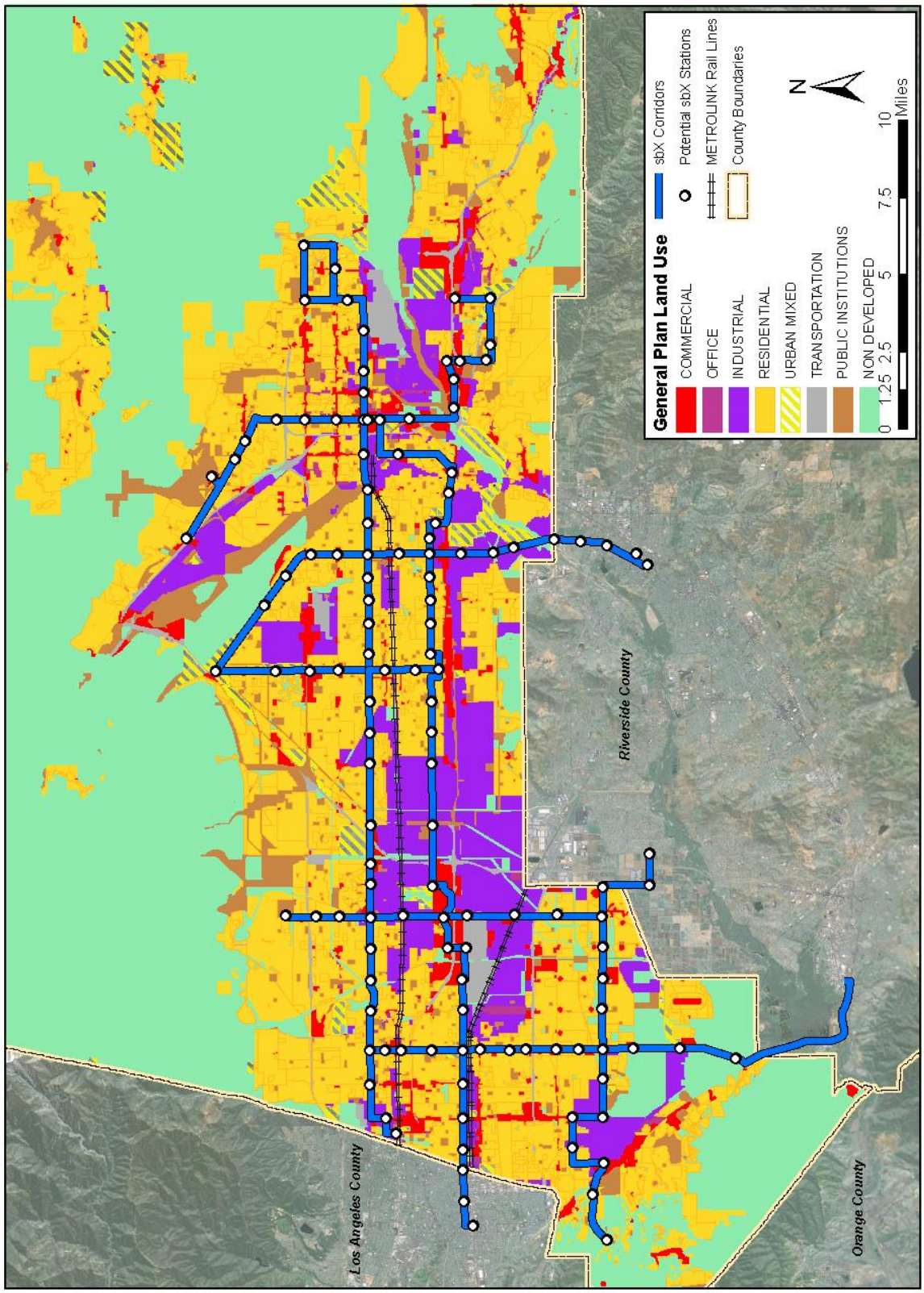


Exhibit 3-5: General Plan Land Use

Table 3-3: Planned Land Use Patterns[1]

SCAG General Plan Land Use Designation	Corridor 1: E Street with Extension	Corridor 2: Foothill East	Corridor 3: Foothill West	Corridor 4: Euclid	Corridor 5: San Bernardino	Corridor 6: Holt/4th	Corridor 7: Grand/ Edison	Corridor 8: Sierra	Corridor 9: Riverside	Corridor 10: Haven
Agriculture	0%	0%	0%	2%	0%	0%	4%	1%	0%	0%
College	2%	0%	0%	1%	5%	0%	0%	0%	0%	0%
Gen. Commercial	9%	12%	10%	4%	3%	4%	5%	4%	5%	13%
Gen. Industrial	1%	1%	3%	11%	18%	26%	4%	21%	7%	1%
Golf Course	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%
Heavy Industrial	5%	0%	0%	0%	1%	1%	0%	0%	3%	0%
Institutions/ Government	6%	5%	3%	4%	0%	3%	1%	1%	8%	2%
K-12 Schools	0%	0%	1%	2%	4%	0%	2%	3%	2%	0%
Light Industrial	5%	6%	10%	7%	0%	14%	1%	10%	6%	2%
Misc. Commercial	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Misc. Industrial	0%	0%	0%	0%	1%	0%	0%	0%	0%	2%
Office	2%	2%	3%	0%	0%	2%	1%	1%	1%	0%
Open-Nondevelop	2%	2%	4%	14%	5%	3%	21%	5%	0%	10%
Other Retail/Service	2%	2%	4%	2%	2%	3%	2%	2%	5%	3%
Parks	1%	2%	2%	1%	1%	0%	0%	0%	0%	1%
Regional Commercial	10%	1%	1%	3%	0%	11%	1%	1%	0%	0%
Residential	42%	62%	52%	47%	57%	18%	50%	38%	55%	52%
Transportation	3%	4%	1%	0%	1%	12%	2%	0%	0%	0%
Urban Mixed	5%	1%	6%	1%	0%	3%	5%	9%	6%	10%
Utilities	5%	1%	0%	1%	0%	1%	0%	1%	0%	3%
Average Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

[1]Land use analysis only for portions of the corridor within San Bernardino County.

Table 3-4: Summarized Results of Land Use Survey.

	Chino	Chino Hills	Colton	Fontana	Highland	Loma Linda	Montclair	Ontario	Rancho Cucamonga	Redlands	Rialto	San Bernardino	Upland
Mixed Use Designation	X	X	X	X	X		X		X				X
Maximum Density (DU/AC)	40	35	30	40	30	20	40	25	30	27	35	36	30
Transit Supportive Policies			X	X		X	X	X		X	X	X	
Parking Management Strategies	X	X	X		X	X					X	X	X
TOD Policies	X					X	X	X	X			X	
Urban Design Policies	X	X		X	X	X	X	X	X	X	X	X	X
Growth Management	X	X				X		X					

Source: Parsons, 2009.

development around stations. Maximum Densities were gathered to understand the maximum level of development sites can currently be developed at. Transit supportive policies and parking management strategies were analyzed to understand the current parking scenario. The analysis also shows what cities have TOD policies already in place and what cities have urban design policies in place that support high quality development. Growth Management policies can be used to support transit, but must be analyzed at individually.

3.4.1 Specific Plan and Planned Development Areas

In coordination with SANBAG's Long Range Transit Plan the study team held city outreach meetings in May of 2009, and the following areas have been identified to accommodate planned growth.

Chino

The city of Chino is developing the Ag Preserve as a TOD-based development with a maximum 40 dwelling units per acre (DU/Ac) for residential land uses. This specific plan area is set to accommodate most of the growth planned in the city. A second area of growth is around the current Transit Center which is planned to develop into a civic center.

The Shoppes, Chino Hills

Chino Hills

The Shoppes, a Specific Plan area, has mixed uses and a hotel in the downtown and is located next to the civic center. It features over 70 retail tenants and 60,000 square feet of second story office space. The surrounding trade area encompasses a population of one million. The master plan for the Shoppes at Chino Hills includes a new Chino Hills Community Park and a new Chino Hills Civic Center, featuring a police department, library, city hall and five administration facilities.

Colton

The city is currently working on two Specific Plan areas. The West Valley Specific Plan which is the location of one of the Compass Blueprint sites and covers 285 acres, next to Arrowhead Medical Center. The second Specific Plan is for the Pellissier Ranch, an urban village near a proposed Metrolink station. The superblock area would have about 4,200 dwelling units plus office and retail at densities up to 30 DU/Ac.

The city is also looking to accommodate planned growth along Mount Vernon Street and at Colton Avenue and Valley Boulevard.

Fontana

Fontana is currently developing the Metrolink station and Transfer Center site to include more intensive uses including affordable senior housing. Fontana is also accommodating planned growth on Foothill Boulevard and on Baseline Road.

Highland

The City of Highland is planning for growth in various locations throughout the city. Planned developments include:

- East Highlands Ranch planned unit development to the east of SR-30 has been the prime shaper of the development in the city.
- Sunrise Ranch is a potential residential development that may accommodate 2,000 to 10,000 dwelling units and up to 30 DU/Ac. There is no specific plan for this area at this point.
- Many of the midblock commercial uses along Baseline, which is the principal east-west corridor through the city, have been re-designated as medium-density residential uses.
- Golden Triangle, a specific plan area formed by two creeks and Boulder Avenue is a master-planned, mixed-use development.

- 5th Street and Victoria Avenue are planned to be major employment centers to support the San Bernardino airport, that includes Business Parks and other industrial land uses.

Loma Linda

Loma Linda has recently passed a city ordinance that manages growth in the city. Planned growth areas are located next to transit stations, and for Loma Linda University housing.

Montclair

The existing commercial and industrial land uses north of I-10 and between Holt Boulevard and Mission Boulevard attract many people. Residential neighborhoods are predominant in the southern portion of the I-10 Freeway up to Holt Boulevard.

Montclair Transcenter, Montclair

The North Montclair Downtown Specific Plan proposes a mixed-use, transit-oriented development between the Montclair Gold Line/Metrolink station and the Montclair Plaza. Mixed-use development is intended to create a transit village with a range of medium to high-density housing, retail, commercial, and office development.

This development will reinforce the significance of the Montclair Transcenter as an Omnitrans service focal point.

Ontario

Major commercial developments in Eastern Ontario include:

- Ontario Mills: 8 million square feet of office, commercial, residential, and industrial uses.
- CA Commerce center: 1420 acres of development.
- Centerlake: 1.3 million square feet of commercial and business uses.
- Village industrial park: Large-scale warehousing and distribution uses for Hyundai, Honda and Inland Container.

Ontario Mills, Ontario

Citizens Bank Arena, Ontario

Unique areas that have special attention for development are:

- Grove Avenue Corridor Business Park
- Town Center Study Area
- East Holt Boulevard Study Area

Rancho Cucamonga

Rancho Cucamonga aims to increase mixed-use development along Foothill Boulevard and the Empire Lakes area. Additionally, the city aims to consolidate open space preserves. The following Specific Plans and Planned Communities have been approved:

Foothill Boulevard, Rancho Cucamonga

- Foothill Boulevard Visual Improvement Plan: The plan proposes a series of activity centers and gateways, linked through a unifying streetscape design.
- Etiwanda Specific Plan: This rural area is located in the northeast corner of the city and the purpose of the Plan is to ensure long-term rural character.
- Etiwanda North Specific Plan: The General Plan aims to make open space a prominent feature in these 6,840 acres of land, located just above the Etiwanda Specific Plan area.
- Victoria Community Plan: With Victoria Park Lane as the central corridor, the City plans to build residential villages and related uses in the 2,150 acres of land bounded on the north by Highland Avenue, the east by Etiwanda Avenue, and the south and west by the I-15, Arrow Route, Base Line Road, Milliken, Pacific Electric Trail and Deer Creek.
- Terra Vista Community Plan: This central core area is planned for a mixed-use development along Foothill Boulevard and Haven Avenue.

Redlands

The Downtown Redlands Specific Plan makes specific proposals for the development of the downtown area between Redlands Boulevard and the I-10 Freeway. This includes two- and three-story mixed-use development in the Town Center District and industrial buildings in the Service Commercial District.

Rialto

The city of Rialto has identified Foothill Boulevard and its downtown area for potential infill development. The downtown area will bring more mixed-uses including commercial and residential development.

Vacant sites on Foothill Boulevard are being looked at for redevelopment.

San Bernardino

The City of San Bernardino is currently developing the downtown specific plan for revitalizing the downtown area. The plan will include mixed development as part of the revitalization and is based on the transit village concept. The city is also planning for development of industrial uses at the San Bernardino International Airport.

Looking North on E Street, Downtown San Bernardino

Upland

The City of Upland is reopening the Vision Plan for Foothill Boulevard. Also, there is a Downtown Specific Plan, which allows 30 or more DU/Ac. The City is especially interested in planning in the southwestern portion of the city, which has been recently annexed and is near the Montclair Transit Center.

Development on Foothill Boulevard, Upland

The Downtown Specific Plan for Historic Downtown Upland is meant to guide future growth and economic development in this area of the City. It will address land use, public facilities and services, urban design, transportation, housing, and other issues of interest to the community and provide specific guidance for private property owners, businesses, and residents.

The College Park Specific Plan is a 39.7-acre mixed-use development consisting of two land use components; commercial and residential. The commercial component is approximately 8.0 acres and consists of a 40,500 square foot retail center (shops and restaurants); a 4,000 square foot service station and mini-mart. The square footages described above are considered the maximum allowed. The residential component is approximately 31.7 acres and consists of a mixture of single-family units, multi-family units, private recreation areas/facilities for each residential use and a park.

3.4.2 Key Activity Centers

As part of the existing plans and policies survey, key activity centers in the San Bernardino Valley were identified. Key activity centers are identified to analyze potential improvements in transit service. The following key activity centers have been identified in the San Bernardino Valley and are presented in Exhibit 3-6.

3.4.3 Redevelopment Areas

As part of the existing plans and policies survey, redevelopment areas in the San Bernardino Valley were identified. The following redevelopment areas have been identified in the San Bernardino Valley and are presented in Table 3-5.

3.5 Current Transit Services

This section presents operating summaries and transit ridership data for existing transit services to address the current transit ridership in relation to the planned transit corridors. However, due to varying levels of transit service within each corridor, a simple comparison of the corridors to the planned BRT alignments can be misleading.

In order to gain a more accurate comparison of ridership in the corridors the following considerations regarding existing service levels must be taken into account:

- the magnitude of existing transit service provided;
- the geographic orientation of the existing travel markets, as related to the future BRT alignments; and
- the degree to which the existing routes match the coverage area of planned BRT alignments.

For example, five of the planned BRT corridors (1, 2, 3, 6, and 9) follow an alignment that is very similar to the alignment of an existing Omnitrans local bus route. The other five corridors are served by existing services ranging from a combination of existing routes (Corridors 4, 5 and 8) to virtually no service (Corridor 7).

The existing Omnitrans local bus routes serving the San Bernardino Valley are summarized in Table 3-6. This table summarizes the peak headways and ridership data for the 30 numbered bus routes as they existed in 2006. More recent data is available but is not consistent with on-off counts and on-board survey data used in validation of the regional travel demand model described in Chapter 4 to forecast future ridership and user benefits for the BRT corridors. Most of the transit routes are unchanged in the eastern San Bernardino Valley, but there are some significant changes to the route structure in the western San Bernardino Valley. The BRT corridors that are most affected by these changes are Corridor 4 and Corridor 10.

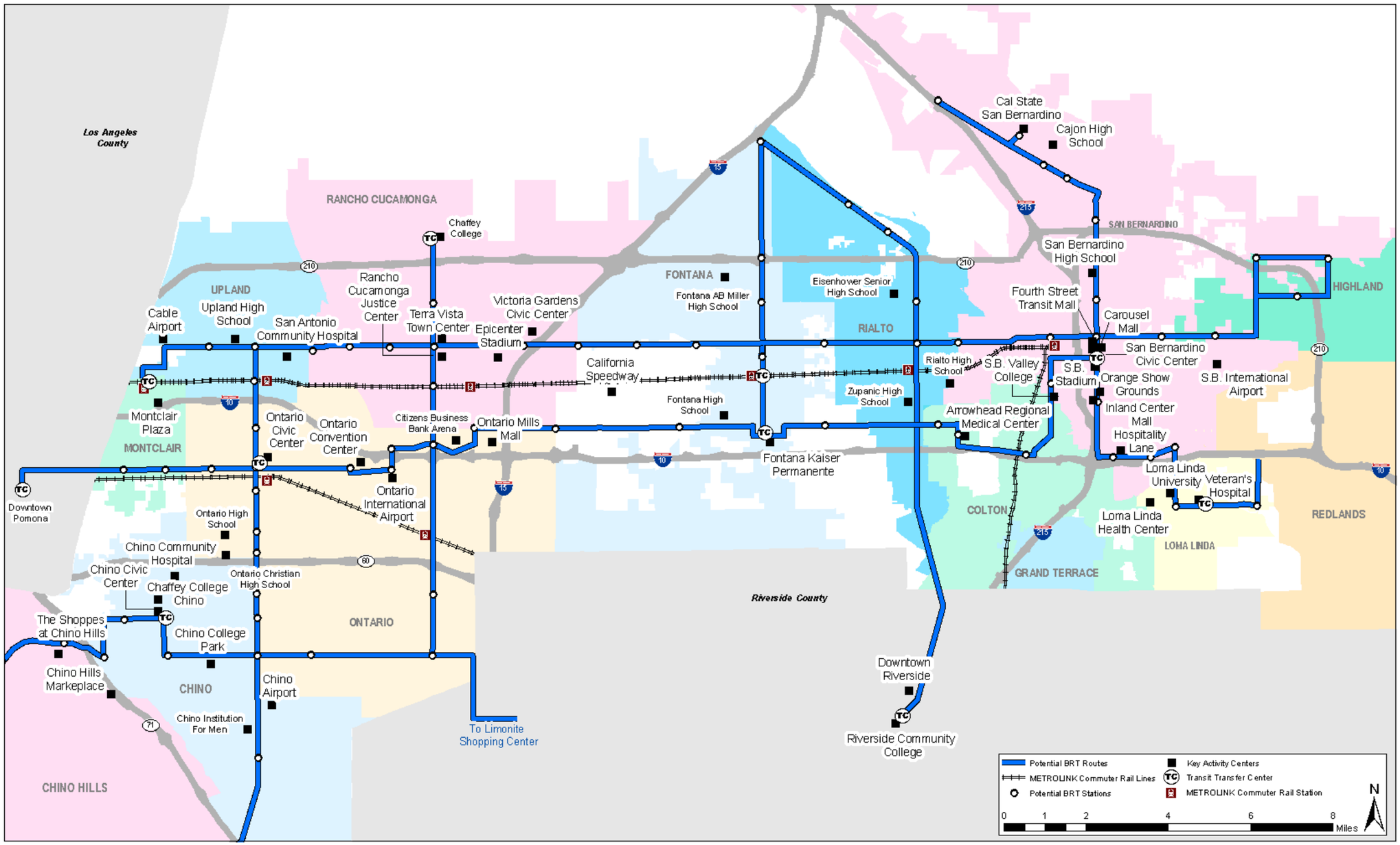
Exhibits 3-7 and 3-8 show the magnitude of daily Omnitrans passenger boardings at bus stops and daily passenger volumes along transit corridors, respectively. The exhibits clearly show the corridor-oriented nature of the passenger boardings with the highest magnitude of boardings occurring in Corridors 1, 2, 3, 5 and 6.

Table 3-7 shows the existing Transcenters and other major transfer locations in the Omnitrans service area. This table lists the Omnitrans routes and other operators' services provided at each of these centers.

Table 3-5: Redevelopment Areas

Corridor	Redevelopment Opportunity Areas
1 - E Street	**San Bernardino:** San Bernardino Downtown Revitalization; Lakes Development Project (San Bernardino Valley Municipal Water District); Uptown Redevelopment Project Subarea "A"; Central City North Redevelopment Project.
	Loma Linda: Neighborhood Improvement Projects; North Central Neighborhood.
	Colton: Mt. Vernon Redevelopment Area; Cooley Ranch Redevelopment Area; Santa Ana River Redevelopment Area.
2 - Foothill Boulevard East	**Fontana:** Downtown Project Area; Sierra Corridor Commercial Project Area.
	Rialto: Central Business District; Industrial Subarea "B".
	San Bernardino: San Bernardino Downtown Revitalization; The Lakes Development; Uptown Redevelopment Project Subarea "A"; Central City North Redevelopment Project.
3 - Foothill Boulevard West	**Fontana:** Downtown Project Area; North Fontana Project Area; Sierra Corridor Commercial Project Area.
	Rancho Cucamonga: Foothill Boulevard/I-15 interchange; Victoria Gardens Mall and mixed-use developments.
	Upland: Magnolia Redevelopment Project Area.
	Ontario: Project Area 2.
4 - Euclid Avenue	**Chino:** Chino Redevelopment Project Area; Chino Transcenter.
	Montclair: Expansion and Renovation of the Montclair Plaza; Central Avenue, featuring the Town Center development, is the well-traveled corridor which provides many new retail redevelopment opportunities; The Redevelopment Agency has assisted in the formation of "Foundation Areas" to improve the quality of life in multifamily neighborhoods.
	Upland: Magnolia Redevelopment Project Area.
	Ontario: Center City; Cimarron; Project Area 2.
5 - San Bernardino Avenue	**Fontana:** Sierra Corridor Commercial Project Area.
	Rialto: Gateway Commercial Redevelopment Project.
	Colton: Rancho-Mill Redevelopment Area; Mt. Vernon Redevelopment Area; Downtown Redevelopment; West Valley Redevelopment Area; Cooley Ranch Redevelopment Area; Santa Ana River Redevelopment Area.
6 - Holt Avenue/4th Street	**Montclair:** Central Avenue.
	Ontario: Central Avenue; Cimarron; Project Area 1; Project Area 2.
	Fontana: Downtown Project Area; Southwest Industrial Park Project Area; Sierra Corridor Commercial Project Area.
7 - Grand/Edison	**Chino:** Portions of the Merged Chino Redevelopment Project Area.
	Ontario: Portions of the Ontario Redevelopment Project Area 2.
8 - Sierra Avenue	**Fontana:** Downtown Project Area; Southwest Industrial Park Project Area; Sierra Corridor Commercial Project Area; North Fontana Project Area.
9 - Riverside Avenue	**Rialto:** Central Business District; Industrial Subarea "B"; Gateway Commercial Redevelopment Project.
10 - Haven Avenue	**Ontario:** Center City; Cimarron; Project Area 1; Project Area 2.
	Rancho Cucamonga: Foothill Boulevard/I-15 interchange; Victoria Gardens Mall and mixed-use developments.

Exhibit 3-6: Key Activity Centers



VISION Alternative for Year 2035

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

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Table 3-6: Omnitrans Bus Routes Operating Statistics

Route	Peak Headway	Vehicles	Revenue VHT	Boardings	Maximum Load
1	15	8	117.7	3,462	804
2	15	10	127.5	4,113	929
3	20	5	77.7	2,821	553
4	20	5	74.1	2,876	584
5	30	4	65.0	1,820	431
7	30	3	39.9	1,030	268
8	60	3	45.6	828	166
9	60	3	49.0	1,041	210
10	30	4	52.3	1,278	323
11	30	4	66.0	1,272	328
14	15	7	107.7	3,968	911
15	30	8	117.0	2,591	395
19	30	7	101.8	2,627	406
20	30	2	29.9	635	168
22	20	6	94.7	2,000	386
28	60	1	12.8	150	68
29	60	1	11.8	209	84
31	60	1	12.8	94	22
60	60	3	48.5	723	136
61	15	13	199.0	5,349	901
62	30	5	75.9	1,370	295
63	30	4	54.5	1,203	321
65	30	4	69.0	1,094	257
66	15	11	155.3	3,072	624
67	60	3	41.5	702	123
68	30	7	104.0	1,373	232
70	60	2	26.1	348	96
71	60	3	10.3	807	212
75	60	1	47.3	107	42
90	45	6	91.1	1,225	282
Total		**144**	**2,126**	**50,189**	

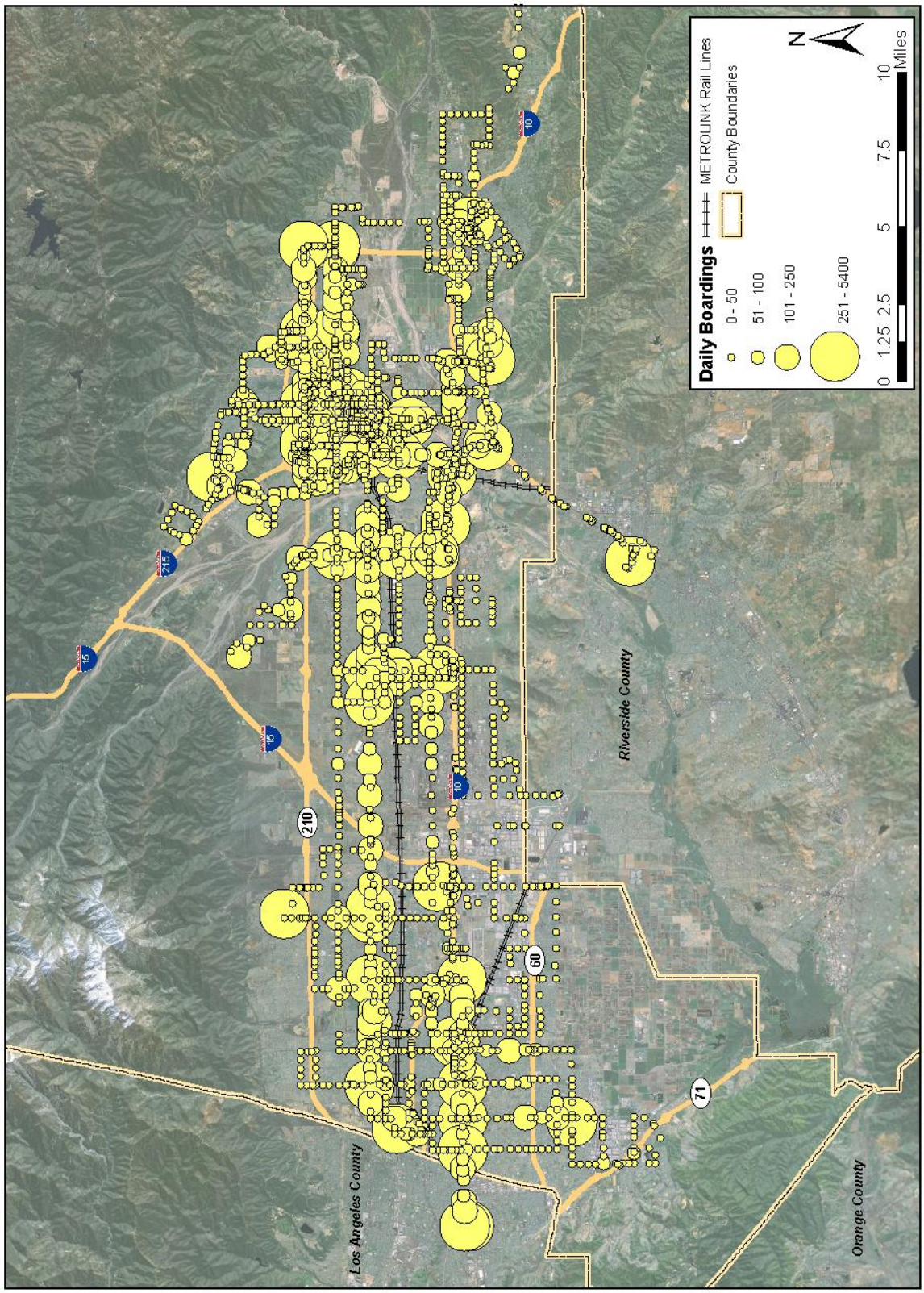
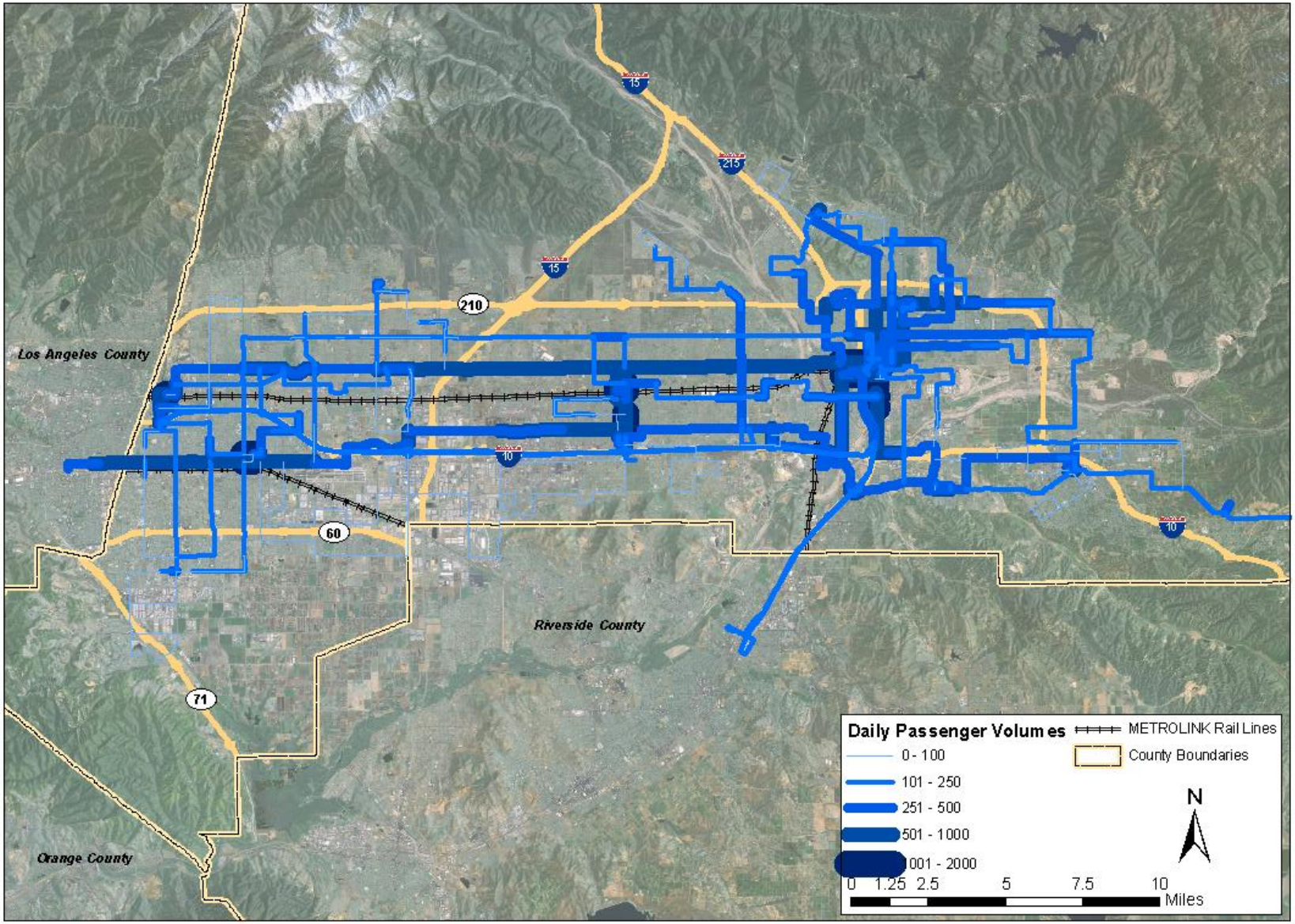


Exhibit 3-7: Daily Bus Passenger Boardings



Existing Daily Volumes

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 3-8: Daily Bus Passenger Volumes

Table 3-7: Existing Transcenters, Transit Centers and Other Major Transfer Locations

Transit Center	Bus Bays	Services/Routes
Montclair Transcenter	14	Omnitrans: 62, 65, 66, 68
		Regional Transit Connections Available:
		Omnitrans IEC: 90
		RTA Route: 204
		Metrolink: San Bernardino Line
		Foothill Transit: 699, 187, 292, 294, 492, 480, 190, 197, 690, Silver Streak BRT
Chino Transcenter	7	Omnitrans: 62, 63, 65a, 65b, 68, OmniLink
		Regional Transit Connections Available:
		Foothill Transit: 497
		OCTA: 758
Ontario Transcenter	6	Omnitrans; 61, 62, 63, 67, 70, 75
South Fontana Transcenter	4	Omnitrans: 19, 20, 28, 29, 61, 71
Fontana Metrolink Station Transcenter	9	Omnitrans: 10, 14, 15, 19, 20, 61, 66, 67, 71
		Regional Transit Connections Available;
		Metrolink: San Bernardino Line
Redlands Mall	5	Omnitrans: 8, 9, 15, 19
		Regional Transit Connections Available:
		RTA: 36
4th Street Transit Mall (San Bernardino)	14	Omnitrans: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 14, 15
		Regional Transit Connections Available:
		MARTA: Off The Mountain Service
		Omnitrans: 215
Inland Center Mall (San Bernardino)	1	Omnitrans: 2
		Regional Transit Connections Available:
		N/A
Ontario Mills Center	4	Omnitrans: 60, 61, 70, 71, 75
		Regional Transit Connections Available:
		RTA: 204
Ontario Airport	1	Omnitrans: 61
		Regional Transit Connections Available:
		Airport Shuttle
Arrowhead Medical Center	4	Omnitrans: 1, 19, 22
Pomona Transcenter	10	Omnitrans: 61
		Regional Transit Connections Available:
		Foothill Transit: 191, 193, 195, 292, 294, 291s, 291n, 480w, 480e, 482
		LAMTA: 484
		Metrolink: San Bernardino Line

Source: Parsons, 2009.

Table 3-8 displays the total amount of daily ridership activity (boarding plus alighting) at bus stops in each of the ten BRT corridors. Existing Omnitrans local bus routes that currently serve as the *primary* transit route in a potential BRT corridor are displayed in bold numbers in this table. For the purposes of the subsequent analysis *primary* transit routes are defined as local bus routes that serve virtually the same alignment that will be served by the proposed BRT route, but with more bus stops and slower operating speeds than the proposed BRT service.

The data in Table 3-8 shows that there is a very wide range of existing daily ridership within the ten corridors, ranging from approximately 1,500 passenger movements in Corridor 7, to more than 37,000 passenger movements in Corridor 2.

The data in Table 3-9 can be used to estimate the relative number of existing transit riders who are likely to use the planned BRT routes. However, this data must first be adjusted to account for the wide variation in the degree to which riders from each transit route are likely to contribute to the BRT ridership.

Table 3-8: Omnitrans Route Ridership Activity within BRT Corridors

Route	Riders	BRT 1	BRT 2	BRT 3	BRT 4	BRT 5	BRT 6	BRT 7	BRT 8	BRT 9	BRT 10
1	3,462	3,052	2,851	0	0	5,077	0	0	0	0	0
2	4,113	**8,226**	3,167	0	0	2,994	0	0	0	0	0
3	2,821	2,195	3,737	0	0	1,160	0	0	0	0	0
4	2,876	2,266	4,067	0	0	1,125	0	0	0	0	0
5	1,820	2,080	1,140	0	0	760	0	0	0	0	0
7	1,030	2,037	790	0	0	603	0	0	0	0	0
8	828	716	617	0	0	435	0	0	0	0	0
9	1,041	974	511	0	0	459	0	0	0	0	0
10	1,278	672	1,616	765	0	424	0	0	707	576	0
11	1,272	1,438	730	0	0	585	0	0	0	0	0
14	3,968	1,661	**7,936**	2,796	0	2,209	0	0	2,840	1,429	0
15	2,591	1,331	3,867	659	0	1,650	0	0	693	525	0
19	2,627	1,117	568	568	0	2,114	546	0	1,086	252	0
20	635	0	447	525	0	294	752	0	769	0	0
22	2,000	0	1,497	0	0	1,263	0	0	186	**3,998**	0
28	150	0	0	0	0	143	201	0	143	0	0
29	209	0	0	0	0	298	186	0	186	2	0
31	94	0	0	0	0	0	0	0	0	0	0
60	723	0	0	409	0	0	451	0	0	0	329
61	5,349	0	1,550	1,550	1,635	1,125	**9,299**	0	2,674	0	280
62	1,370	0	0	802	1,188	0	996	261	0	0	0
63	1,203	0	0	408	1,170	0	1,019	287	0	0	0
65	1,094	0	0	402	0	0	430	703	0	0	0
66	3,072	0	1,449	**6,144**	573	0	0	0	1,449	0	823
67	702	0	277	431	498	0	247	0	336	0	154
68	1,373	0	0	1,553	320	0	342	284	0	0	797
70	348	0	0	0	241	0	375	0	0	0	109
71	807	0	288	446	0	264	530	0	541	0	222
75	107	0	0	0	65	0	127	0	0	0	46
90	1,225	637	637	392	0	989	503	0	155	740	0
Total	50,189	28,402	37,743	17,850	5,690	23,968	16,003	1,535	11,765	7,521	2,760
Corridor Ranking		2	1	4	8	3	5	10	6	7	9

Table 3-9: Potential BRT Riders Currently Using Omnitrans Routes

	BRT 1	BRT 2	BRT 3	BRT 4	BRT 5	BRT 6	BRT 7	BRT 8	BRT 9	BRT 10
Potential BRT Riders	6,237	6,774	3,602	606	2,962	5,165	111	1,601	2,087	284
Corridor Ranking	2	1	4	8	5	3	10	7	6	9

Appendix B presents a completed analysis of the existing ridership data to estimate what portion of the existing ridership would be likely to use the potential BRT services in the planned BRT corridors. The values in Table 3-9 represent an estimate only of the potential ridership associated with existing transit riders. These values do not include potential ridership associated with new transit riders who may be attracted by the higher levels of service or greater mobility levels provided by the BRT services. The data in Table 3-9 shows that there is a very wide range of existing ridership that could be served by BRT services in the ten corridors, ranging from approximately 100 potential BRT trips per day in Corridor 7, to more than 6,000 potential BRT trips per day in Corridors 1 and 2.

Comparison of Tables 3-8 and 3-9 shows that some corridors are affected by converting the activity data to potential ridership estimates. For example, BRT Corridor 5 – San Bernardino has the third highest bus stop activity (Table 3-9), but the fifth highest ridership estimate (Table 3-10).

This is mainly because Corridor 5 do not have an existing primary transit route, while Corridor 3 - Foothill West and Corridor 6 - Holt/4th do.

The values presented in Table 3-9 present one of the factors considered by FTA when a project is considered for Very Small Starts funding, the demonstration that the existing ridership in a corridor is at least 3,000 passengers per day. FTA guidance requires the collection of specific ridership data in the corridor, and a detailed analysis of that data similar to the analysis used to create the data in Table 3-6. Table 3-9 shows that four corridors (1, 2, 3, and 6) currently have ridership in excess of 3,000 to meet the VSS requirement, and Corridor 5 is very close to meeting this threshold.

The analysis that was used to produce Table 3-9 also shows that BRT corridors that include an existing primary local bus route are much more likely to meet the VSS requirement. The data show that pursuing VSS funding is a viable development strategy if corridors have existing primary local bus routes.

Table 3-10: Omnitrans' 15 Most Active Bus Stops

Location	Activity	Local Routes (2006)	BRT Corridor(s)
Fontana Metrolink	5,375	10,14,15,19,20,61,66,67,71	2,3,8
4th and E	4,947	2,3,7,8,9,10,11,14,15	1,2,5
Arrowhead RMC	1,674	1,19,22,90	5
Ontario Transfer Center	1,620	61,62,63,67,70,75	4,6
Montclair Metrolink TC	1,532	62,65,66,68,90	3
South Fontana Transfer C	1,514	19,20,28,29,61,71,90	5,6,8
Foothill and Riverside	1,322	14,22	2,9
4th and Arrowhead	1,182	3,4,7,8,9,14,90	1,2,5
Court and E	1,179	1,2,5	1,2,5
Ontario Mills Mall	1,128	61,66,71,75,90	6
Redlands Mall	1,106	8,9,15,19	None
Highland and E	1,071	2,3,4	1
CSU-SB	1,012	2,5,7,11	1
Highland and Del Rosa	887	1,3,4,5	None
Valley and La Cadena	809	1,19	5

Passenger boardings and alightings at bus stops is a very specific geographic indicator of transit penetration into local travel markets. High numbers of existing boardings at stops within specific corridors is an indication of their current importance in the system. Table 3-10 lists the 15 most active bus stops in the Omnitrans system based on 2006 rider information. 13 of Omnitrans' 15 most active bus stops lie within these ten corridors, as do most of the major activity centers. As shown in Table 3-10, 12 of the most active bus stops currently in the system are located in the eastern half of the Omnitrans service area. The two heaviest stop locations are the Fontana Metrolink Station and the E Street Transit Mall in San Bernardino, with approximately 5,000 daily boarding and alighting passengers each. Not coincidentally, these are the two transfer locations that serve the greatest number of transit routes in the Omnitrans service area.

Using data provided by Omnitrans, it is possible to determine the maximum passenger load points for passengers on buses for each bus route by direction. Accordingly, there is one point for the east bound (or north bound) buses and another one for those traveling west (or south). As shown in Table 3-11, the ten most crowded points in the system come from just five bus routes (Omnitrans Routes 2, 14, 61, 1 and 66). Four of those five bus routes are the primary local routes serving four of the planned BRT corridors (Omnitrans Route 2 serves BRT Corridor 1, Route 14 serves Corridor 2, Route 66 serves Corridor 3, and Route 61 serves Corridor 6).

According to the SRTP, "although the system has enjoyed strong growth in recent years the trend has leveled off and ridership has actually declined slightly in the most recent 12-month period." Changes in ridership by route have varied with some routes gaining and others losing ridership over the years. However, a key predictor of future success for the introduction of premium services is the propensity for ridership growth linked to service improvements.

Omnitrans has experienced significant ridership growth associated with headway improvements on its fixed bus routes. Specifically, a "before and after" evaluation on Route 61 showed a 159 percent rider increase when service frequency was increased from one bus per hour to four buses per hour. This example of ridership growth creates a "high end" of possible future growth in ridership associated with the introduction of premium transit service in the ten major transit corridors.

Ridership is fairly consistent throughout the average weekday. Ridership also varies little by day of week or day of month. Ridership rapidly builds during the morning peak (6-8 am) and generally remains high throughout the middle of the day. Corridors 1, 2, and 4 display high afternoon peak activity between 2:00 and 4:00 PM, probably related to school trips. Activity in these heavy ridership corridors causes the system average to show a peak in the 2:00-4:00 PM timeframe.

Table 3-11: Maximum Daily Passenger Load Points for Omnitrans Local Bus Routes

Route	Direction	Max Load
2	Southbound	929
14	Westbound	911
2	Northbound	904
61	Westbound	901
61	Eastbound	819
14	Eastbound	818
1	Westbound	804
1	Eastbound	705
66	Eastbound	624
66	Westbound	624
4	Clockwise	584
3	Counter-Clockwise	553

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Chapter 4 Travel Demand Forecasting and Future Conditions

This chapter examines the future travel markets in the major transit corridors and the growth potential in transit ridership that might be achieved with the introduction of premium transit service and good connections to other corridors and other operators.

Route 1 Bus at Stop

The examination of growth potential in each corridor will be demonstrated with demographic forecasts and the projected magnitude of future trip-making.

4.1 Model Methodology

This section summarizes the methodology used and the validation of the San Bernardino Valley Focus Model (SBVFM) that was used to produce travel forecasts for the Long Range Transit Plan. This information is intended to demonstrate the model's ability to replicate existing transportation and transit ridership behavior, and the utility of the model for forecasting future ridership and comparing transit alternatives in San Bernardino County.

This document provides a summary of the development and derivation of the SBVFM from the SCAG regional model, followed by a summary of the model validation effort specifically required for the analysis of transit services in the San Bernardino Valley. The regional nature of the remainder of the model (outside of the San Bernardino Valley) also allows for future transit analysis of the remainder of San Bernardino County, to a sketch planning lower level of accuracy.

The forecasting tool employed for the Long Range Transit Plan is the San Bernardino Valley Focus Model, which is a focused model derived from the Southern California Association of Governments (SCAG) regional model. The SCAG model was updated in conjunction with the 2008 Regional Transportation Plan (RTP), using a Year 2003 validation year. Elements of the SCAG regional mode are documented in 2003 SCAG Model Validation and Summary – Regional Transportation Model (January 2008).

The San Bernardino Valley Focus Model uses the basic structure of the SCAG model, with the mode choice model customized for use in the San Bernardino Valley, and an increased level of definition based on the networks and zone systems found in the San Bernardino Valley.

The SBVFM employs the traditional 4-step modeling process used in the SCAG model. Special features of the SBVFM include:

- All person trips are modeled (including non-motorized)
- Auto-ownership is tied to transit accessibility
- Person trip data is split into peak and off-peak trips before application of distribution models
- Feed-back loops are used for highway and transit skims
- Log-sums are used to estimate composite impedance for application within trip distribution models for home-based work trip purpose
- Vehicle trip data is split into four time periods and converted to origin-destination format using time-of-day models
- Transit trip data is assigned to peak (AM) and off-peak (midday) time periods in production-attraction format

Zone System

The SBVFM uses a zone system comprising 3,056 transportation analysis zones (TAZs) in the SCAG region. The development of the SBVFM zone system was accomplished in two steps. First, 259 TAZs in the two regional statistical areas (RSAs) that comprise the San Bernardino Valley area were split into 1,811 TAZs, using zone boundaries defined in other local models used in the San Bernardino Valley. Then, the SCAG TAZs in remote areas of Ventura, Los Angeles, Orange, Riverside, and Imperial Counties were aggregated to coarser levels of detail, reducing the number of zones outside of San Bernardino County by 2,605. The net result was to decrease the number of zones in the SCAG region from 4,109 to 3,056. Table 4-1 displays a comparison of the number of TAZs in each of the six SCAG counties, plus the other centroids, in the SCAG zone system and in the SBVFM zone system.

Table 4-1: Transportation Analysis Zones in SCAG Counties

County	SCAG TAZs	SBVFM TAZs
Ventura	210	6
Los Angeles	2,243	541
Orange	666	225
Riverside	475	320
San Bernardino	701	1,954
Imperial	110	6
Total	4,109	3,056

Source: Hexagon, 2009.

Socioeconomic Data

The SBVFM uses the same socioeconomic input data used in the SCAG model, except that the data has been aggregated or split to fit into the SBVFM zone system. Key socioeconomic data used in the SBVFM include the following variables:

- Total population
- Resident population
- Workers
- Single-family households
- Multiple family households
- K-12 school enrollment
- College/university enrollment
- Retail employment
- Service employment
- Basic employment
- Median household income

Trip Purposes

Trips made for different purposes have been found to have different characteristics, such as average trip lengths and mode shares. Therefore, separate models are used to estimate the different trip purposes. The most popular trip purposes used in travel demand models are home-based work, home-based other, and non-home based.

The SBVFM uses the same 13 trip purposes that are used in the SCAG models. These include six home-based work trip purposes, five home-based other trip purposes, and two non-home based trip purposes. These trip purposes are summarized below.

- Home-based work-direct
  - Low income (<$25,000)
  - Middle income ($25,000 - $49,999)
  - High income ($50,000 or more)
- Home-based work-strategic
  - Low income
  - Middle income
  - High income
- Home-based elementary & high school
- Home-based college & university
- Home-based shopping
- Home-based social-recreational
- Home-based other
- Work-based other
- Other-based other

Trip Generation

Trip generation is the process of estimating how many person trips are generated within each TAZ. The trip generation procedures used in the SBVFM are identical to the procedures used in the SCAG model. Trip generation models estimate both productions (the home end of trips) and attractions (the non-home end of trips). Finally, the productions and attractions are "balanced" so that the regional totals match for each trip purpose.

Trip productions are estimated for each TAZ using a cross-classification procedure. First, the households in each TAZ are stratified into household categories. For example, for home-based work trips the households are stratified

into a matrix of household categories based on the number of persons in the household, the number of workers in the household, and the income level of the household. The cross-classification variables for the work and non-work trip purposes are summarized below.

- Home-based work & work-based other (3-way cross classification)
  - 6 household size groups (1, 2, 3, 4, 5, 6+)
  - 4 workers per household groups (0, 1, 2, 3+)
  - 3 income level groups (low, middle, high)
- Home-based non-work & other-based other (2-way cross classification)
  - 6 household size groups (1, 2, 3, 4, 5, 6+)
  - 5 auto ownership level groups (0, 1, 2, 3, 4+)

After households have been stratified, trip production rates are applied to each household category, and the resulting trips are aggregated in each TAZ for use in subsequent models. Trip attractions are estimated by a set of linear equations that convert households, employees, and school enrollment to trip attractions.

Transportation Networks

The SBVFM uses an integrated transportation network that includes mixed-flow and exclusive facilities for highway, truck and transit modes. The network structure is similar to the structure developed for the SCAG models, with some refinements designed to ease the analysis of trips that may be influenced by the transportation alternatives in the detailed analysis, such as a refined coding of access to transit stations.

Highway Networks

The SBVFM uses separate networks for four different time periods:

- AM Peak - 6 to 9 AM
- Midday - 9 AM to 3 PM
- PM Peak - 3 to 7 PM
- Nighttime - 7 PM to 6 AM

The primary difference between the four networks is the highway capacity, which is a function of the number of hours of duration of each time period.

The links in the networks are coded with each of the modes that are available. The available highway modes include mixed flow links, shared ride HOV links (two or more persons), carpool HOV links (three or more persons), toll links, and truck links for three classes of heavy vehicles.

The highway networks are comprised of nodes and links that connect centroids that represent the 3,056 TAZs in the SCAG region. The Year 2007 highway network also includes 40 external stations that represent highway connections to areas outside of the SCAG region, 12 airports, 40 port zones, and 150 park-and-ride stations that allow the model to simulate travel between the highway network and the integrated transit network.

The highway network comprises over 100,000 directional highway links. Each link is characterized by several attributes, including seven area types, ten facility classes, number of travel lanes, the link capacity, free-flow speed, and observed speed. The latter three attributes are estimated for each link with the use of lookup tables, based on the area type, facility type, number of lanes and other link variables.

The highway network includes attributes and modes that identify toll facilities and truck facilities. Toll facilities in the region are currently restricted to Orange County. Link attributes defining truck facilities serve two purposes. First, they allow the user to restrict or prohibit the use of links by certain classes of heavy duty trucks. Second, they allow the model assignment algorithm to assign truck trips separately from other modes, which allows the user to convert truck trips to Passenger Car Equivalents (PCEs).

Transit Networks

The SBVFM includes two transit networks integrated with the AM Peak period and Midday period highway networks. The AM Peak transit network is used to assign and model transit trips made in the peak periods, and the Midday transit network is used to assign and model transit trips made in the off-peak periods.

The transit networks are integrated with the highway networks so that mixed flow links can carry both highway and transit modes, and exclusive links can carry various transit modes. The transit networks also include auxiliary transit links that allow trips to access transit services

and to transfer between transit routes. In all, the SBVFM transit networks include 13 transit modes and eight auxiliary transit modes.

The transit networks include transit lines that are characterized by itineraries, stop locations, and headways. The AM Peak transit network includes over 1,500 transit lines in the region, including 30 Omnitrans routes, three Metrolink routes, and two other operators serving the San Bernardino Valley.

Highway and Transit Skims

One of the main objectives of the highway and transit networks is to allow an accurate and comparative representation of the travel times and costs between centroids by various modes of travel. The travel times and costs estimated by the model are commonly referred to as skims. The highway and transit skims are used as input to both the trip distribution and mode choice models.

Highway skims for both the peak and off-peak time periods are based on the travel time on the shortest time paths. The highway operating speeds are estimated using equilibrium assignment algorithms that adjust the operating speeds on the links as a function of the demand-capacity ratio for the link. In model application, the highway skims are based on feedback speeds resulting from three iterations of the four-step modeling procedure. The in-vehicle highway travel times are augmented with terminal times associated with the locations of the trip ends. The SBVFM calculates separate highway skims for both HOV trips and drive alone trips (which are restricted from using HOV links).

Transit skims comprise a combination of variables that have been found to affect both the choice of the transit mode and the path choice for transit options. The variables include the in-vehicle transit travel time, access time between centroids and transit stops, wait time, number of transfers, and transit fare. The in-vehicle travel times are estimated using different procedures for transit routes using mixed-flow and exclusive facilities. For transit routes that operate on links that are coded as mixed flow facilities, the transit operating speeds are estimated as a function of the highway operating speed. For exclusive transit links, the operating speeds are derived from published schedules. The SBVFM calculates separate transit skims for four sets of transit paths for both walk-access and drive-access paths. The four sets of transit paths are distinguished by the transit modes that are allowed for the trip, as follows:

- The local bus paths allow only transit modes defined as local;
- The premium express bus paths can use transit modes described as either local or express bus;
- The premium LRT/BRT paths can use any transit mode described as bus, light-rail transit or subway transit; and
- The commuter rail paths can use any transit mode.

Trip Distribution

The SBVFM trip distribution models use a gravity model to distribute trips. These models use the same procedures and gamma function friction factors similar to those developed for the SCAG trip distribution models. However, the gamma function coefficients are recalibrated specifically for use in the SBVFM.

The input data to the trip distribution models include productions and attractions output from the trip generation models, and impedance data from highway and transit skims. Three different types of travel impedance are used for different types of trip distribution models. The six home-based work trip purposes use composite impedance log-sums, which also serve as the denominator in the mode choice equations. The composite impedance log-sums for the medium income and high income households include all travel modes, while the composite impedance log-sums for the low income households exclude drive alone skims from the log-sum calculation. The other seven trip purposes use impedances derived exclusively from highway travel times.

The distribution process creates 26 person trip tables, including both peak period and off-peak period trip tables for each of the 13 trip purposes estimated by the trip generation models. Following application of the trip distribution models, the 26 resulting trip tables are aggregated to 14 person trip tables, as summarized below in Table 4-2.

Table 4-2: Trip Purposes from Trip Generation and Trip Distribution Models

Trip Generation Models (26 Tables)	Trip Distribution Models (14 Tables)
Peak Period Home-Based Work Direct - Low Income	Peak Period Home-Based Work - Low Income
Peak Period Home-Based Work Strategic - Low Income	
Peak Period Home-Based Work Direct - Medium Income	Peak Period Home-Based Work - Medium Income
Peak Period Home-Based Work Strategic - Medium Income	
Peak Period College/University	
Peak Period Home-Based Work Direct - High Income	Peak Period Home-Based Work - High Income
Peak Period Home-Based Work Strategic - High Income	
Peak Period School (K-12)	Peak Period School (K-12)
Peak Period Home-Based Shopping	Peak Period Home-Based Other
Peak Period Home-Based Social-Recreational	
Peak Period Home-Based Other	
Peak Period Work-Based Other	Peak Period Work-Based Other
Peak Period Other-Based Other	Peak Period Other-Based Other
Off-Peak Period Home-Based Work Direct - Low Income	Off-Peak Period Home-Based Work - Low Income
Off-Peak Period Home-Based Work Strategic - Low Income	
Off-Peak Period Home-Based Work Direct - Medium Income	Off-Peak Period Home-Based Work - Medium Income
Off-Peak Period Home-Based Work Strategic - Medium Income	
Off-Peak Period College/University	
Off-Peak Period Home-Based Work Direct - High Income	Off-Peak Period Home-Based Work - High Income
Off-Peak Period Home-Based Work Strategic - High Income	
Off-Peak Period School (K-12)	Off-Peak Period School (K-12)
Off-Peak Period Home-Based Shopping	Off-Peak Period Home-Based Other
Off-Peak Period Home-Based Social-Recreational	
Off-Peak Period Home-Based Other	
Off-Peak Period Work-Based Other	Off-Peak Period Work-Based Other
Off-Peak Period Other-Based Other	Off-Peak Period Other-Based Other

Source: Hexagon, 2009.

Mode Choice

The SBVFM mode choice model uses the basic structure developed for the OCTAM mode choice model. However the modal bias constants have been recalibrated specifically for use in the SBVFM.

The mode choice model application is performed separately for the peak and off-peak time periods for five trip purposes (home-based work, home-based school, home-based other, work-based other, and other-based other).

Different model constants are used for households in the three income classes for home-based work and home-based other trips. The home-based work stratification of households by income class is output from the trip distribution models. The home-based other stratification of households by income class is estimated for each TAZ as a constant share of the total person trips.

The TAZ data is split into three walk access markets - short walk, long walk, and no transit - based on a GIS analysis of the relationship between the zone boundaries and the transit stop locations.

The regional modal bias constants were adjusted to match observed modal shares derived from regional household survey data. The modal bias constants were further refined for San Bernardino County to match data from transit boarding counts collected for Omnitrans and Metrolink in the Year 2006.

Time-of-Day and Assignment Procedures

The procedures from the preceding three steps (trip generation, trip distribution, and mode choice) are used to create vehicle and transit trip tables in production-attraction format for peak and off-peak trips for five trip purposes.

The time-of-day factors are used to convert the vehicle trip tables from production-attraction format to origin-destination format for the four time periods (AM Peak, Midday, PM Peak, and Nighttime). The resulting vehicle trip tables are then assigned to the highway networks using a multi-class assignment procedure for three auto modes (drive alone, two-person, and three-or-more person) and three truck modes (light-heavy vehicle, medium-heavy vehicle, and heavy-heavy vehicle).

The transit trip tables are assigned in production-attraction format to the AM Peak transit network (peak transit trips) and the midday transit network (off-peak transit trips). The transit trips are assigned separately to the four sets of transit paths before the assignment results are aggregated together.

Additional Model Development and Validation Tools

Additional tools used to complete this model validation include the following.

- *SCAG 2008 Regional Transportation Plan* (RTP), and *SCAG 2008 Regional Transportation Improvement Program* (RTIP) are used to validate the background highway and transit networks for the Base Year (2007) conditions.
- *Omnitrans Short Range Transit Plan, 2008-2013, Final Report* (July 2007) is used to validate the model's ability to replicate transit ridership on individual transit routes.
- *San Bernardino Associated Governments Profile of Transit Riders in San Bernardino County – Final Report* (March 2007) is used to validate the model's ability to replicate characteristics of transit riders served by Omnitrans bus routes and Metrolink rail routes.
- Omnitrans On-board Survey data (2006) is used to validate the model's ability to replicate transit trips and origin-destination data in the San Bernardino Valley.
- Omnitrans on/off count data, collected in 2006, is used to validate activity at bus stops in the San Bernardino Valley.

Travel Demand Model Validation

The model validation process is presented sequentially from the coarser level to the finer level of analysis as follows:

- Regional model validation
- San Bernardino Valley/Omnitrans System-Wide validation

Regional Validation

The regional transportation system in the SBVFM is virtually identical to the transportation system in the parent SCAG Regional Model, except in the San Bernardino Valley. The SCAG model was validated to Year 2003 conditions. Validation of this model is documented in 2003 SCAG Model Validation and Summary – Regional Transportation Model (January 2008).

The San Bernardino Valley Focus Model (SBVFM) is a focus model derived from the most recent update of the SCAG Regional Model, with the mode choice component of the model derived from the OCTA Model. First developed in 2004, the SBVFM has been used in several projects in the San Bernardino Valley. The SBVFM was developed specifically to satisfy FTA guidelines for transit modes for New Starts projects. The SBVFM was applied successfully to complete the Alternatives Analysis phase of the E Street Corridor Project, and to bring that project into the Project Development phase.

For purposes of this model validation, the SBVFM was updated to base year 2006/2007 conditions. This base year update includes:

- SE data interpolated between 2003 and 2010 data;
- Highway network updated to reflect freeway projects throughout the region;
- Transit networks updated to reflect regional rail and rapid bus services;
- Highway network updated to reflect highway improvements in the San Bernardino Valley; and
- Transit networks updated to reflect Omnitrans bus services.

Several regional validation issues arose from the conversion of the SCAG regional model to the San Bernardino Valley Focus Model. The most important was related to the trip distribution and mode choice models. Each of these issues were identified and addressed to maintain validation of the regional application of the models to the focus model.

The key issue with the trip distribution model arose as a result of the disaggregation of zones within the San Bernardino Valley focus area. The finer zone structure within the focus area resulted in many more opportunities for short trips than within the SCAG regional model. Since the trip distribution element of the regional model had been calibrated with relatively few short trips (less than six minutes in highway travel time)

there was limited data with which to calibrate the gravity models for the shorter trip lengths.

Meanwhile, the focus model has a significant number of possible trips of the shorter trip lengths to consider. When the regional trip distribution model was applied within the context of the focus model, the result was that far more very short trips than desired. In order to correct this problem it was necessary to recalibrate the friction factors for the short trip lengths. The result of this effort produced trip distributions and trip tables that were consistent with the results of the regional model validation. Separate recalibration efforts were completed for home-based work trips for three income groups, plus seven other trip purposes, each in two time periods.

The key issue with the mode choice model was the ratio of transit boardings to linked transit trips, resulting from the average number of transfers assigned to each transit trip. To correct this problem the coefficients for second wait (transfer wait) were adjusted from 2.0 times first wait to 3.0 times first wait. This adjustment was applied to all travel modes for both the path-builder and mode choice model to maintain consistency within the models.

Other elements of the models were not adversely affected by the transition from the regional model to the focus model, and did not require additional adjustment. These elements include the trip generation model and highway algorithms.

San Bernardino Valley/Omnitrans Bus System

The primary providers of transit service in the San Bernardino Valley are Omnitrans, which operates 29 local bus routes and one express bus route, and Metrolink, which provides regional commuter rail service between downtown Los Angeles and several suburban areas, including the San Bernardino Valley.

For purposes of this model validation, the San Bernardino Valley portion of the SBVFM was updated from the Year 2003 conditions reflected in the SCAG model validation to Year 2006/2007 conditions. This update includes highway improvements in the San Bernardino Valley and local bus service updates. Since the on-board transit survey was conducted in 2006, the validation transit network replicates the local bus routes as they existed in 2006.

Several validation issues were encountered during validation of the mode choice models at the San Bernardino Valley level of detail. The issues requiring the most significant effort to achieve model validation include issues with trip purpose and the assignment results on bus routes with low-frequency vs. high-frequency service.

The original application of the regional models within the context of the San Bernardino Valley Focus Model resulted in a lower percentage of work and school trips on Omnitrans bus routes than were observed during the Omnitrans on-board bus survey. This problem was corrected by applying distinct adjustments to the transit bias constant within the mode choice models for each of the five trip purposes.

The transit assignments resulting from the original application of the focus model resulted in a System-Wide under-assignment of transit trips on high-frequency transit routes (less than 30-minute headways) and over-assignment of transit trips on low-frequency transit routes (60-minute headways). The original version of the path-builders used in the model included a cap on wait time equivalent to a 30-minute headway. This cap was adjusted to a 60-minute headway and the relative assignments on low-frequency vs. high-frequency services improved.

Other important elements of the model were not adversely affected by the transition from the regional model to the focus model, and did not require additional adjustment. These elements include the wealth variable and the relative shares of ridership on local and premium transit modes. The transit travel time functions required only a very minor adjustment to calibrate travel times to bus schedules.

Validation Results

The total boardings on each of the local bus routes operated by Omnitrans are summarized in Table 4-3. This table shows that the daily assignments for most of the transit routes are within +/- 900 daily boardings, or within +/- 30% of the daily ridership, and the root mean statistically error (RMSE) for the transit routes is 0.262.

Table 4-3: Omnitrans Route Validation by Route

Route Number	Type of Route	Headway	Ridership Observed	Estimated	Difference	Ratio
1	East Valley Local	15	3,462	4,064	602	1.17
2	East Valley Local	15	4,113	4,441	328	1.08
3	East Valley Local	20	2,821	2,313	(508)	0.82
4	East Valley Local	20	2,876	2,212	(664)	0.77
5	East Valley Local	30	1,820	1,409	(412)	0.77
7	East Valley Local	30	1,030	1,414	384	1.37
8	East Valley Local	60	828	1,237	409	1.49
9	East Valley Local	60	1,041	1,208	167	1.16
10	East Valley Local	30	1,278	1,574	296	1.23
11	East Valley Local	30	1,272	895	(377)	0.70
14	East Valley Local	15	3,968	3,154	(814)	0.79
15	East Valley Local	30	2,591	3,444	853	1.33
19	East Valley Local	30	2,627	2,992	365	1.14
20	East Valley Local	30	635	209	(426)	0.33
22	East Valley Local	20	2,000	1,672	(328)	0.84
28	East Valley Local	60	150	120	(30)	0.80
29	East Valley Local	60	209	113	(96)	0.54
31	East Valley Local	60	94	299	205	3.19
60	West Valley Local	60	723	655	(68)	0.91
61	West Valley Local	15	5,349	4,620	(729)	0.86
62	West Valley Local	30	1,370	1,758	388	1.28
63	West Valley Local	30	1,203	908	(295)	0.76
65	West Valley Local	30	1,094	1,132	38	1.03
66	West Valley Local	15	3,072	2,970	(102)	0.97
67	West Valley Local	60	702	587	(115)	0.84
68	West Valley Local	30	1,373	1,926	553	1.40
70	West Valley Local	60	348	326	(22)	0.94
71	West Valley Local	60	807	881	74	1.09
75	West Valley Local	60	107	144	37	1.34
90	Express	45	1,225	979	(246)	0.80
Total			50,189	49,656	(533)	0.99

Relative shares of local bus trips in the San Bernardino Valley made for five trip purposes are summarized in Table 4-4. The results shown in this table are expected since the transit bias constants for the San Bernardino Valley were calibrated to match the distribution of transit trips by trip purpose.

Table 4-4: Omnitrans Ridership by Trip Purpose

Trip Purpose	Actual	Target
Home-based Work	34%	34%
Home-based Other	34%	34%
Work-based Other	7%	7%
Home-based School	16%	16%
Other-based Other	9%	9%

The Year 2006 Omnitrans on-board bus survey reports that 53 percent of Omnitrans riders are from households with annual incomes of less than $20,000. The SBVFM accurately reflects this fact, with the mode choice models creating 54 percent of its transit trips from lower income households.

4.2 Year 2035 Future Conditions

The San Bernardino Valley Focus Model was used to produce the ridership forecasts for the BRT corridors. The model uses a horizon year 2035 for regional network and socio-economic input data.

Year 2035 Population and Employment Forecasts

The population of the San Bernardino Valley is expected to grow to over 2 million people in the Year 2035, which is 37 percent higher than the Year 2006 population. Table 4-5 displays population and employment growth data for the year 2035 for each of the ten BRT corridors.

This table shows that the corridors currently house between 70,000 and 215,000 people, and the growth forecasts indicate that population in the corridors will grow to between 115,000 and 273,000 people in the Year 2035. There are

currently four corridors that house fewer than 100,000 people. Each of these corridors is projected to house over 115,000 people in the horizon year.

Employment in the San Bernardino Valley is expected to grow to over 928,000 in the Year 2035, which is 62 percent higher than the Year 2006 employment. Table 4-5 also shows that the corridors currently have between 20,000 and 90,000 employees, and the growth forecasts indicate that employment levels in the corridors will grow to between 44,000 and 162,000 employees in the Year 2035. Each of the corridors is projected to experience an employment growth of at least 50 percent by the horizon year 2035.

Exhibits 4-1 and 4-2 show the forecasts for Employment and Population Densities for Year 2035, respectively.

Year 2035 Highway and Transit Networks

The highway and transit networks used to test the BRT corridors is the 2035 Vision Alternative from the *San Bernardino County Long Range Transportation Plan*. The LRTP studied and compared two other transit network alternatives for the horizon year 2035, but only the 2035 Vision Alternative is of interest for the purposes of the Omnitrans System-Wide Plan.

The 2035 Vision Alternative assumes all existing roadway and transit services will continue and be supplemented by improvements already funded. For roadway improvements, the most significant funded projects are carpool lanes that will be constructed on the I-10 and I-215 freeways. The San Bernardino Valley also has a limited number of street improvements funded along with improvements to traffic signal systems. The highway network used for the analysis of the 2035 Vision Alternative is based on the SCAG Baseline network, plus highway improvements in the San Bernardino Valley that are funded by the extension of Measure I. Exhibit 4-4 shows the future Traffic congestion expressed as an hourly volume/capacity ration.

Table 4-5: Population and Employment Forecasts

	1. E Street Corridor	2. Foothill East Corridor	3. Foothill West Corridor	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
Existing Population	135,232	215,424	186,113	136,210	115,408	154,329	70,384	77,671	95,803	84,760
Population Density (per Acre)	5.68	9.26	8.59	7.97	7.49	6.79	3.98	7.10	5.64	5.55
Population 2035	181,585	273,132	227,766	216,666	157,911	214,337	178,365	115,163	149,520	134,034
Population Growth in Corridor	34%	27%	22%	59%	37%	39%	153%	48%	56%	58%
Existing Employment	90,016	61,942	78,755	36,545	59,740	99,917	39,799	24,024	20,856	50,743
Employment Density (per Acre)	3.78	2.66	3.64	2.14	3.88	4.40	2.25	2.19	1.23	3.32
Employment 2035	155,220	107,188	118,134	68,318	102,049	162,168	73,169	43,973	48,594	92,347
Employment Growth in Corridor	72%	73%	50%	87%	71%	62%	84%	83%	133%	82%

[1] Within 1 mile of alignment.

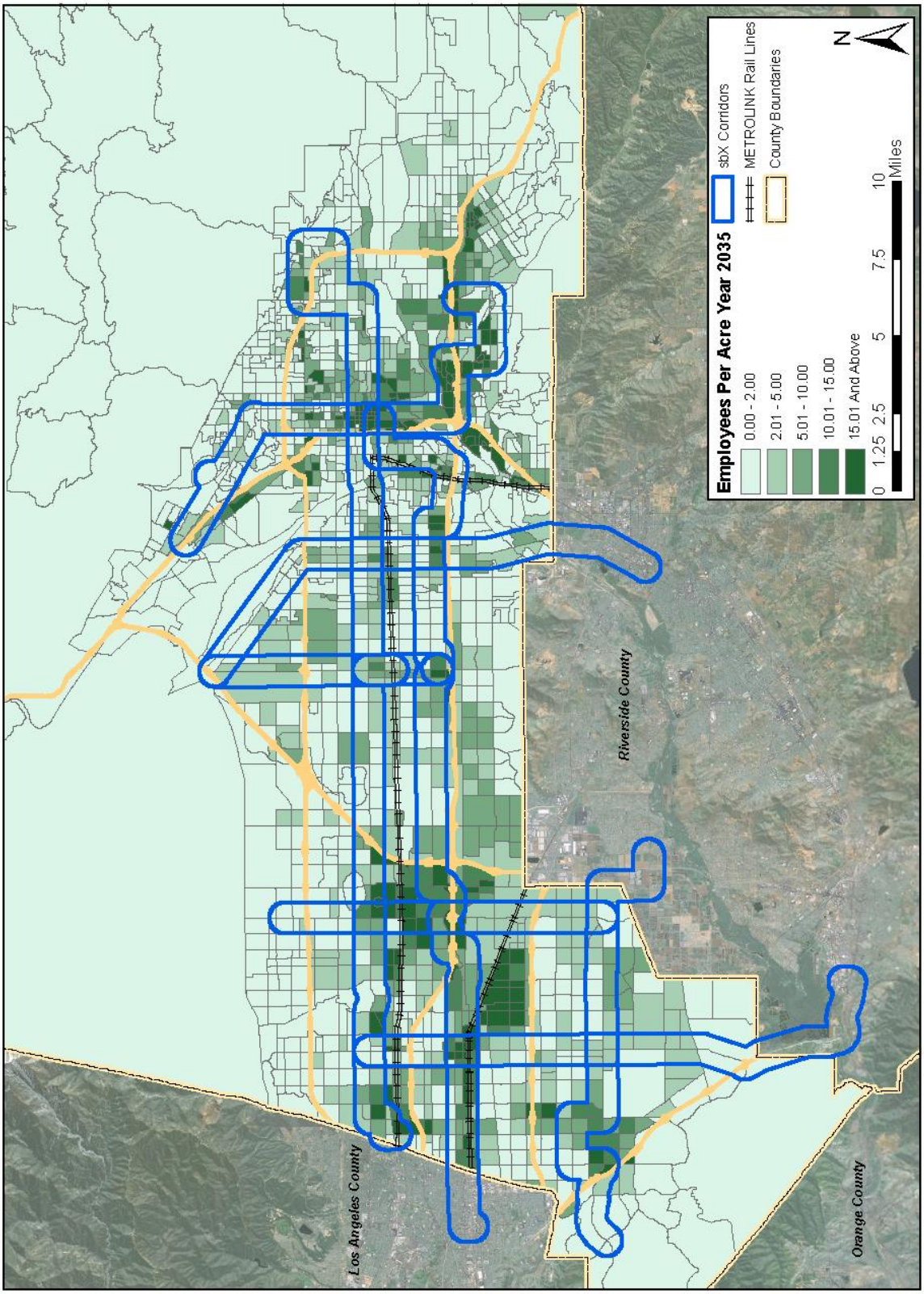
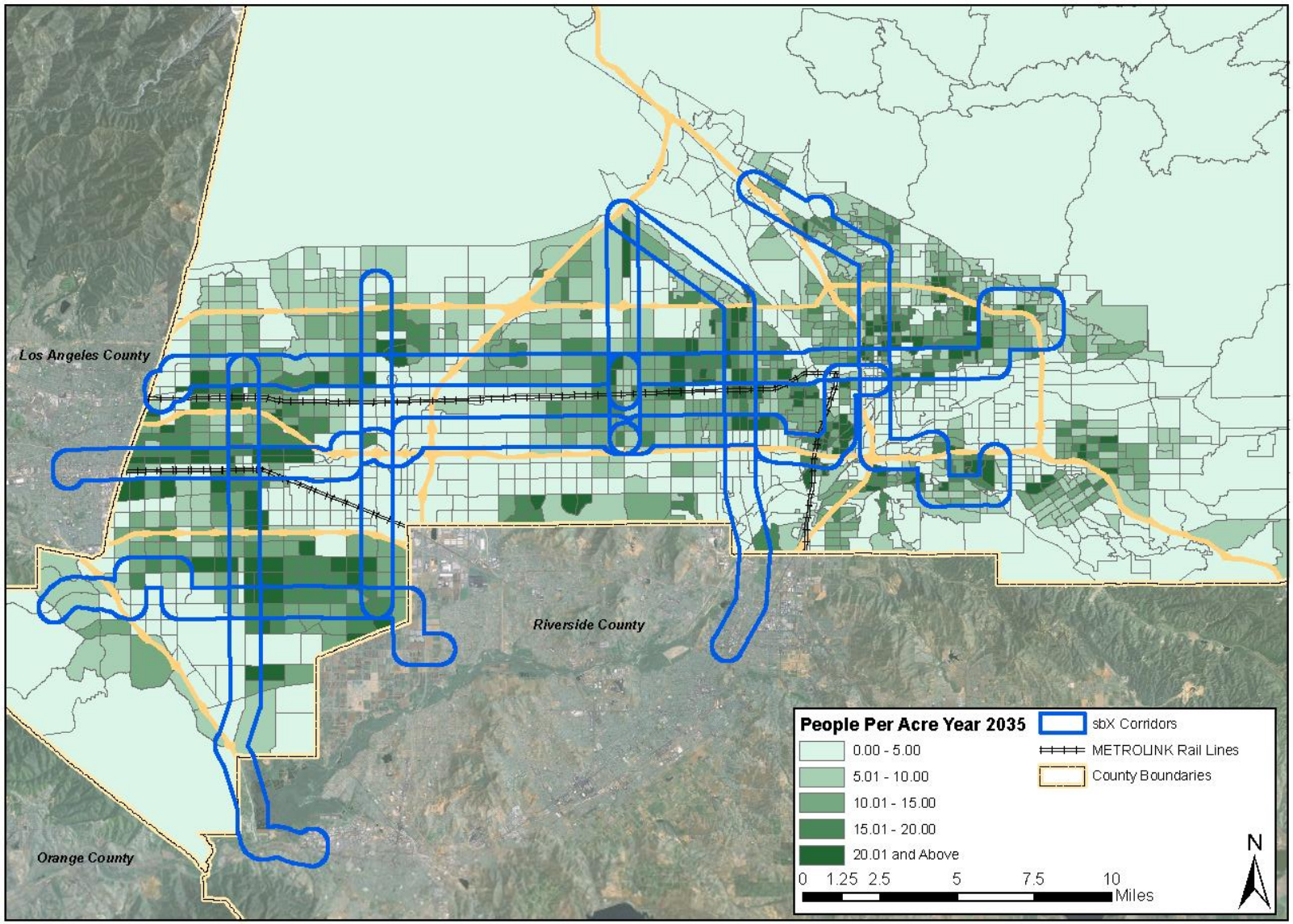


Exhibit 4-1: Employment Density Forecast Year 2035



Year 2035 Population Density

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 4-2: Population Density Forecast Year 2035

The Omnitrans transit elements of the 2035 Vision Alternative, shown in Exhibit 4-3, are based on a redesign of the trunk routes in the Omnitrans service area into a grid system of 10 BRT routes, 38 local routes, and one express route.

The 2035 Vision Alternative also includes the following planned transit elements:

- **New San Bernardino Transit Station.** Omnitrans plans to move the downtown transfer function from the temporary but long-lived 4th Street location to a new facility at Rialto and E Street. Omnitrans has completed the purchase of the land for the new facility. This project is now in the design phase and it is scheduled to be ready for transit operations in 2012, and for completion of the depot in 2013.

  The new San Bernardino Transit Station will become the major transfer point for all the various modes of transit in the area. The San Bernardino Transit Station will serve as the major transfer site for Omnitrans' routes serving the East Valley. Routes approaching downtown San Bernardino from the south will be rerouted directly into the new facility before heading back to their current route. Routes approaching downtown from the north will be extended down to Rialto.

  Additionally, the San Bernardino Transit Station will serve as the site of a new Metrolink station, with the trips now terminating at the San Bernardino Metrolink Station (Old Santa Fe Depot) extended to the new Transit Station.

- **Higher Metrolink Commuter Rail 2030 Service Levels.** Metrolink commuter rail service will be enhanced from existing service levels with additional peak and off-peak service.

- **Metro Gold Line Extension to Montclair-** Currently, the Metro Gold Line train service operates from L.A. Union Station to Pasadena. An extension east along the I-210 to the Montclair Transcenter in San Bernardino County is in the detailed corridor planning stages.

- **Redlands Rail Line plus supporting shuttles.** The proposed Redlands Rail Line is a partially funded east-west rail line with one end in the E Street Corridor. The rail line has been planned by SANBAG as a key connection between Redlands and central San Bernardino. The *Redlands Passenger Rail Station Area Plan* identifies nine Redlands Passenger Rail stations with TOD along the former BNSF Redlands Subdivision right-of-way. Possible station sites include the San Bernardino Transit Station, Mill Street, Tippecanoe Avenue, California Street, Alabama Street, New York Street, Downtown Redlands, and University of Redlands.

  The service is envisioned to operate with Diesel Multiple Unit (DMU) trains on 15 minute headways. The western terminus will be the new San Bernardino Transit Station at Rialto Avenue and E Street. Four shuttle bus services between specific stations and San Bernardino International Airport, Loma Linda Medical University and Medical Center, Loma Linda VA Hospital, and University of Redlands are also included in the transit network.

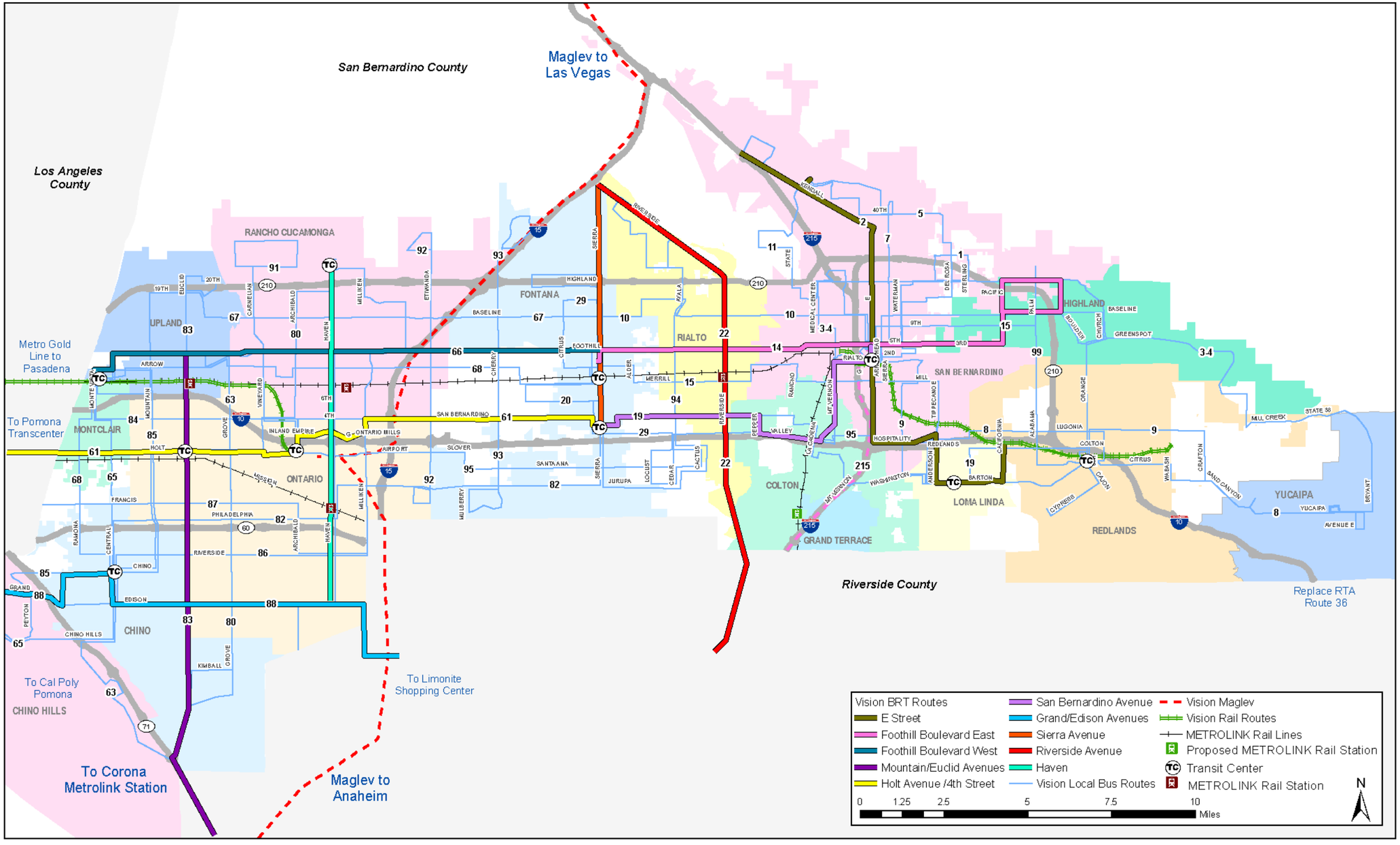
- **Victor Valley Express bus service.** The transit network includes two transit lines between the Victor Valley and the San Bernardino Valley – one route serving Cal State University – San Bernardino and the E Street BRT line, and another route serving the Ontario Mills Mall and Rancho Cucamonga Metrolink Station.

- **MARTA Off-mountain bus service.** Service includes three daily round trips connecting Big Bear Valley to San Bernardino and Highland, and four daily trips serving Lake Arrowhead to San Bernardino and Highland.

- **OCTA Express bus service.** Service includes Route 758, an express bus service between Irvine and Chino Transit Center.

- **RTA bus services.** Service includes Route 25 from Riverside to Loma Linda, and Route 204 from Riverside to Montclair through Ontario Mills Mall.

Exhibit 4-3: LRTP Vision Alternative



VISION Premium Transit Services

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

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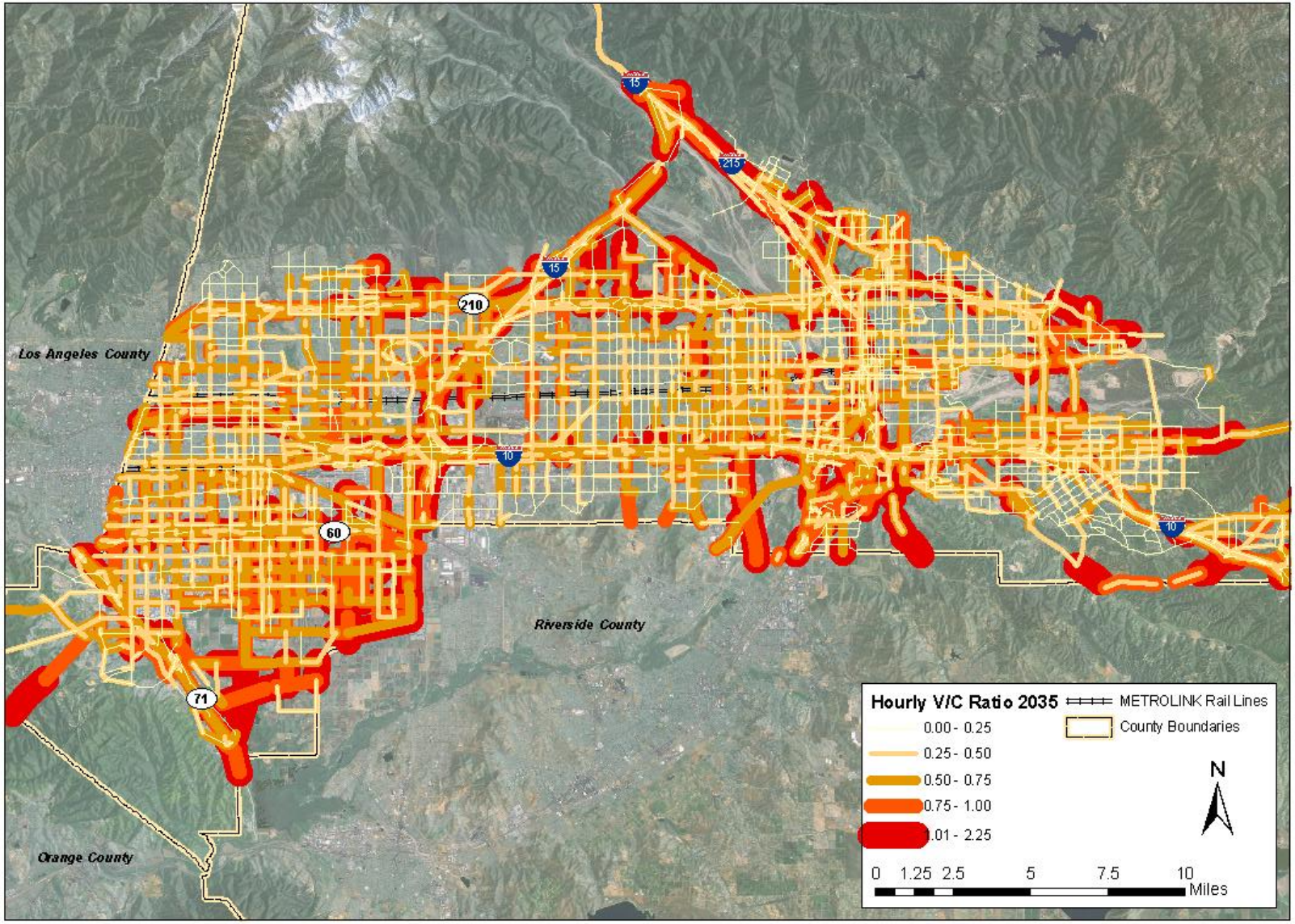


Future Hourly Volume/Capacity Ratio

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 4-4: Year 2035 Hourly Traffic Congestion

- **Sunline Transit Agency service.** Service includes a proposed bus service between the Coachella Valley and hospital services in Loma Linda. This service would be operated by Sunline Transit Agency, and would provide transfer services to the San Bernardino Valley for Morongo Basin residents.

4.3 Year 2035 Model Application and Results

Year 2035 Transit Assignment Results

The analysis of the 2035 Vision Alternative began by coding all transit routes in the Omnitrans system with high service frequencies – 15-minute peak and off-peak period headways for local routes, 5-minute peak and 10-minute off-peak headways for BRT routes. Iterative model runs (equilibration) were used to fine tune the headways to provide cost-effective service with high seating probability throughout the system. The results of this equilibration process are displayed in Tables 4-6 for BRT Routes and 4-7 for Local Bus Routes. This table also displays the total weekday ridership forecasts for each of the Omnitrans bus routes in the 2035 Vision Alternative.

Table 4-8 displays more detail of the total ridership data for each of the ten BRT corridors. This table includes daily and annual ridership forecasts, and daily passenger miles and passenger hours for each corridor.

Each corridor is served by a combination of BRT service and local bus service. Since the BRT stations are spaced approximately one mile apart, the local bus service in each corridor is required to serve transit customers at less popular bus stops. Nine of the ten BRT corridors have a single local bus route that acts as a shadow service to the BRT route. Corridor 5 has several local bus routes that act as a shadow service over different portions of the BRT route.

The total ridership data displayed in Table 4-8 demonstrate the wide range of ridership potential for the ten corridors, ranging from over 3 million annual passengers in Corridors 1, 2, and 5, to less than 1 million annual passengers in Corridor 8. This ridership data and other performance criteria are used in the following chapter to evaluate and compare the corridors, and to recommend a phasing plan for implementation of the BRT corridors.

Exhibits 4-5 and 4-6, show the future daily boardings and future daily bus volumes, respectively.

Mode of Access

Table 4-9 displays the total access and egress modes for each of the BRT routes for the completed system of ten BRT routes. This table shows that 40% of BRT passengers are expected to access the system by walking, four percent will use an automobile to drive to the BRT station, and the remaining 56% will transfer from another transit route. This table also shows the number of parking spaces needed to accommodate full build out of the BRT system.

BRT Route 1 (E Street) is expected to have the highest percentage of passengers accessing the route by walk mode – 47 percent – due to the high density of both residential development and major attractions in the corridor. BRT Route 8 (Sierra Street) is expected to have the lowest percentage of passengers accessing the route by walk mode – 30 percent – due to the relatively low density of residential development and attractions.

Drive access to the various BRT routes ranges from less than one percent (BRT Route 2 – Foothill East) to over seven percent (BRT Route 4 – Euclid). The BRT routes with the higher drive access shares are found in corridors that serve the periphery of the ultimate BRT system, where commuters from outlying communities will be more likely to drive to one of the terminal stations in the system. The BRT routes with the lower drive access shares are found in corridors that will be centrally located within the ultimate system, where transit passengers will be more likely to have convenient walk access to the system.

BRT Route 1 (E Street) is the only route that is expected to have less than 50 percent of its passengers transferring to or from the BRT route. BRT Route 8 (Sierra Street), which connects the east-west BRT corridors, is expected to have the highest transfer rate – 67 percent.

Table 4-6: BRT Routes Service Frequency and Ridership Forecast

BRT Route	Description	Headway		Riders
		Peak	Off-peak	
BRT 1	E Street sbX Redlands Extension	5	10	10,458
BRT 2	Foothill East sbX	5	10	8,485
BRT 3	Foothill West sbX - Foothill	10	15	4,628
BRT 4	Euclid sbX	10	15	5,504
BRT 5	San Bernardino Avenue sbX - San Bernardino	10	10	5,305
BRT 6	Holt/Fourth sbX	10	15	5,977
BRT 7	Grand/Edison sbX	10	20	2,123
BRT 8	Sierra sbX	10	20	1,561
BRT 9	Riverside sbX	10	10	6,360
BRT 10	Haven sbX	10	15	2,946
BRT Total				53,347
Source: Hexagon, 2009.				

Table 4-7: Local and Express Bus Service Frequency and Ridership Forecast

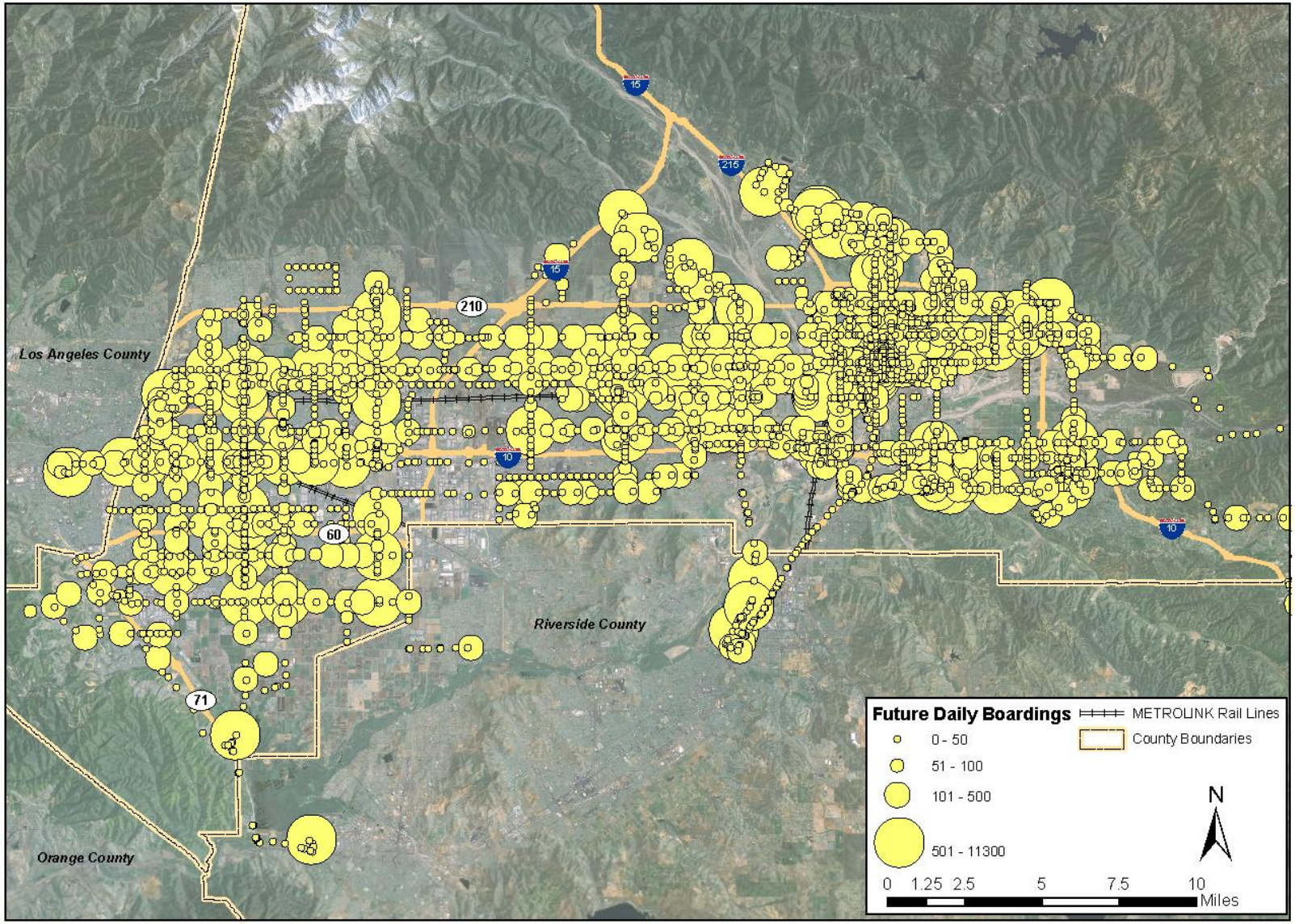
Route	Description	Peak	Off-peak	Riders
1	Colton-Del Rosa	10	15	4,280
2	Cal State-E St-Loma Linda	20	30	1,809
3	Baseline-Highland-SB-Yucaipa	60	60	2,136
4	Baseline-Highland-San Bernardino	20	20	4,817
5	Cal State-Del Rosa-Downtown SB	20	30	1,928
7	N San Bern-Sierra-Downtown SB	20	30	1,843
8	San Bernardino-Mentone-Yucaipa	15	30	3,567
9	San Bernardino-Redlands-Yucaipa	30	30	2,272
10	Fontana-Baseline-San Bernardino	15	30	2,741
11	San Bernardino-Muscoy	30	30	1,127
14	Fontana-Foothill-San Bernardino	20	20	1,747
15	Fontana-Rialto-SB-Highlands-Redlands	10	15	9,874
19	Redlands-Colton-Fontana	20	20	5,043
22	S Rialto-N Rialto	20	30	1,442
61	Fontana-Ontario-Pomona	20	30	3,316
63	Chino-Ontario-Upland	30	30	1,760
65	Montclair-Chino Hills	15	30	3,055
66	Fontana-Foothill-Montclair	20	30	1,837
67	Montclair-Baseline-Fontana	20	30	2,333
68	Chino-Montclair-Chaffey	20	30	3,229
80	Montclair-Ontario-Chaffey	15	30	3,274
81	Ontario-Ont. Mills-Chaffey	60	60	363
82	Rancho-Fontana-Sierra Lakes	20	30	2,922
83	Upland-Euclid-Chino	30	30	844
84	San Bernardino Street E/W Corridor	30	60	652
85	Mountain Avenue N/S Corridor	20	30	1,847
86	Chino-Ontario (Riverside/Milliken)	30	60	980
87	Francis Avenue E/W Corridor	60	60	317

Route	Description	Peak	Off-peak	Riders
88	Edison Avenue E/W Corridor	30	30	1,225
89	Haven Avenue N/S Corridor	30	30	828
91	Vineyard/Carnelian N/S Corridor	60	-	112
93	Cherry Avenue N/S Corridor	30	60	632
94	Cedar/Ayala N/S Corridor	20	30	1,714
95	Santa Ana Avenue E/W Corridor	60	-	257
96	Sierra Avenue N/S Corridor	30	60	578
97	Chino-Industry Metrolink	30	60	487
98	Yucaipa-Beaumont	30	30	746
99	Palm/Alabama N/S Corridor	60	60	839
215	San Bernardino-Riverside Express	30	60	563
BRT Total				53,347
System Total				132,683

Table 4-8: Year 2035 Ridership Forecasts for Major Transit Corridors

Variable	1. E Street	2. Foothill East	3. Foothill West	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
BRT Service										
Route Number	301	302	303	304	305	306	307	308	309	310
Daily Ridership	10,460	8,490	4,630	5,500	5,310	5,980	2,120	1,560	6,360	2,950
Annual Ridership	3,222,000	2,615,000	1,426,000	1,694,000	1,635,000	1,842,000	653,000	480,000	1,959,000	909,000
Daily Passenger Miles	35,500	44,600	29,300	27,100	25,900	34,600	9,100	3,900	27,500	9,600
Daily Passenger Hours	1,741	2,087	1,310	1,287	1,298	1,673	438	202	1,342	479
Average Load	970	1,340	900	760	1,170	850	260	260	840	460
Peak Load (Two-way)	3,340	2,920	1,190	1,880	1,520	1,360	720	700	2,100	740
Peak Load (Directional)	2,210	1,880	860	1,460	930	1,010	550	510	1,220	520
Local Shadow Bus Service										
Route Number	2	14 [1]	66	83	19 [2]	61	88	96	22	89
Daily Ridership	1,810	1,750	1,840	840	5,040	3,320	1,230	580	1,440	830
Annual Ridership	557,000	539,000	567,000	259,000	1,552,000	1,023,000	379,000	179,000	444,000	256,000
Daily Passenger Miles	5,432	7,225	9,685	2,240	21,990	14,904	6,798	1,408	4,222	2,145
Daily Passenger Hours	439	437	547	136	1,422	1,027	345	83	227	163
Total - BRT plus Local Shadow Service										
Daily Ridership	12,270	10,240	6,470	6,340	10,350	9,300	3,350	2,140	7,800	3,780
Annual Ridership	3,779,000	3,154,000	1,993,000	1,953,000	3,187,000	2,865,000	1,032,000	659,000	2,403,000	1,165,000
Daily Passenger Miles	40,932	51,825	38,985	29,340	47,890	49,504	15,898	5,308	31,722	11,745
Daily Passenger Hours	2,180	2,524	1,857	1,423	2,720	2,700	783	285	1,569	642

1 - Omnitrans Route 14 serves western portion of BRT Corridor 2. Remainder of corridor served by portions of Omnitrans Routes 3, 4, and 15
2 - Omnitrans Route 19 serves western portion of BRT Corridor 5. Remainder of corridor served by portion of Omnitrans Route 1.



Year 2035 Daily Boardings

System-Wide Transit Corridor Plan for the San Bernardino Valley

Exhibit 4-5: Year 2035 Daily Passenger Boardings

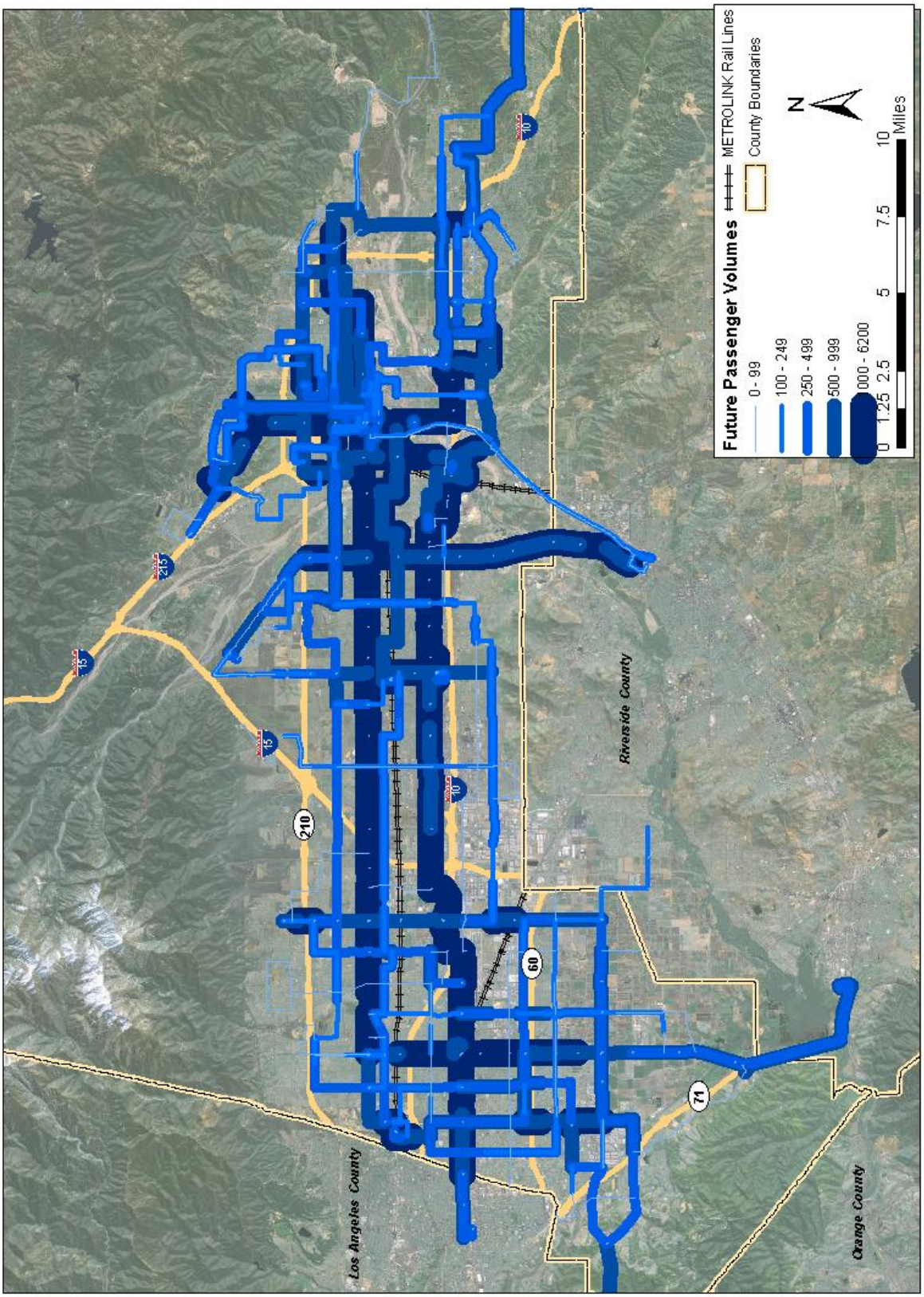


Exhibit 4-6: Year 2035 Daily Volumes

Table 4-9: Drive Access and Park and Ride Spaces

BRT	Trip Ends	Walk Access		Drive Access		Transfer		Parking
Route	Total *	Number	Percent	Number	Percent	Number	Percent	Spaces
BRT 1	20,920	9,810	47%	1,100	5.3%	10,010	48%	550
BRT 2	16,980	7,090	42%	140	0.8%	9,750	57%	70
BRT 3	9,260	3,770	41%	240	2.6%	5,250	57%	120
BRT 4	11,010	3,820	35%	800	7.3%	6,390	58%	400
BRT 5	10,620	3,940	37%	200	1.9%	6,480	61%	100
BRT 6	11,950	4,620	39%	470	3.9%	6,860	57%	235
BRT 7	4,240	1,610	38%	270	6.4%	2,360	56%	135
BRT 8	3,120	950	30%	70	2.2%	2,100	67%	35
BRT 9	12,720	4,670	37%	670	5.3%	7,380	58%	335
BRT 10	5,900	2,350	40%	250	4.2%	3,300	56%	125
Total	106,720	42,630	40%	4,210	3.9%	59,880	56%	2,105
* Each transit trip counts two trip ends - access and egress.								

Since the system will develop in phases, interim and opening year drive access and parking space requirements will be higher, until the ultimate system of BRT routes is completed. In the future, as the demand for parking at BRT stations diminishes, the park-and ride lots can be converted to transit-oriented development.

System Operating Statistics and Costs

The transition of the Omnitrans system, from the existing network of local bus routes to the ambitious network of Bus Rapid Transit routes and supporting local bus routes, will require a substantial investment of funds and a commitment to a common goal. The cost implications of this transition are analyzed in detail in the *San Bernardino County Long Range Transportation Plan*.

Table 4-10 presents a summary of the operating, ridership, cost and performance statistics for the existing Omnitrans service and comparable statistics for the 2035 Vision Alternative, with all costs expressed in year 2009 dollars.

Table 4-10 shows that the 2035 Vision Alternative will increase the Omnitrans existing fleet of 167 vehicles to more than 450 vehicles, an increase of 171 percent. The growth in operating statistics will be somewhat less (164% for VMT and 124% for VHT) because the operating plan for the future system will be oriented towards more peak services, with faster operating speeds on the BRT system.

The ridership forecasts estimate that total transit ridership in the Omnitrans system will increase by 174 percent. The analysis shows that the transit mode share in the Omnitrans service area will increase from an existing transit share of 0.9 percent to 1.4 percent of total weekday trips (the transit share of work trips will increase from 2.2 percent to 3.4 percent).

By design, the equilibrated future system will attain better performance statistics (e.g. the average passenger load will increase by 10 percent and the average speed will increase by 18 percent).

The average operating cost for the 2035 Vision Alternative will be 19 percent higher than the existing cost due to the additional costs required for operating the BRT services ($128 per hour as compared to $88 per hour for local fixed route services). This analysis assumes that fares will be adjusted to maintain a constant fare recovery ratio.

Table 4-10: Existing and Future (2035 Vision Alternative) Operating, Ridership and Cost Statistics

	Year 2009	Year 2035 Vision Alternative			Percent
	Total	Local Bus	BRT	Total	Increase
Peak Vehicles	139	256	120	376	171%
Off-Peak Vehicles	127	176	70	246	94%
Spare Vehicles	28	52	25	77	175%
Total Fleet	167	308	145	453	171%
Weekday VMT	32,000	52,900	29,000	81,900	156%
Weekday VHT	2,100	3,290	1,420	4,710	124%
Weekday Ridership	50,200	84,300	53,300	137,600	174%
Weekday Passenger Miles	200,000	332,000	247,000	579,000	190%
Riders per Vehicle Hour	23.9	25.6	37.5	29.2	22%
Average Load	6.3	6.3	8.5	7.1	13%
Average Speed	15.2	16.1	20.4	17.4	14%
Annual VMT	8,907,000	16,293,000	8,932,000	25,225,000	183%
Annual Revenue VHT	637,800	967,700	417,700	1,385,400	117%
Annual Total VHT	666,400	1,013,300	437,400	1,450,700	118%
Annual Ridership	15,010,000	25,964,000	16,416,000	42,380,000	182%
Annual Passenger Miles	59,801,000	102,256,000	76,076,000	178,332,000	198%
Total Operating Cost	$56,236,000	$89,353,000	$55,957,000	$145,310,000	158%
Total Fare Revenues	$13,500,000	$21,440,000	$13,430,000	$34,870,000	158%
Fare Recovery Ratio	24%	24%	24%	24%	0%
Cost Per Revenue Hour	$88.18	$88.18	$127.93	$104.89	19%
Passengers Per Rev. VHT	23.53	26.83	39.30	30.59	30%

Sustainable Land Use Alternative

The foregoing analysis of the ridership and other impacts of the LRTP Vision Alternative are based on a continuation of existing development plans in the Omnitrans service area. The LRTP also included an analysis of the potential ridership impact due to a revised development plan designed to concentrate growth in specified transit corridors.

The Year 2035 Sustainable Land Use Alternative tests the impacts of a significant redistribution of the future growth in the San Bernardino Valley. Table 4-11 provides a summary of the transit ridership impacts of the Sustainable Land Use Alternative on each of the Omnitrans BRT routes, and for the entire Omnitrans fixed-route system. This table shows that the Omnitrans bus routes in the Sustainable Land Use Alternative will carry almost 144,000 riders in the Year 2035. This represents an 8 percent increase over Vision Alternative ridership levels. Over 62,000 of the transit riders in this alternative use BRT routes, which represents a 17 percent increase over Vision Alternative BRT ridership. This ridership forecast indicates that there is a significant potential for increased transit ridership in the San Bernardino Valley if the nature of future development can be controlled.

Table 4-11: BRT Routes Ridership Forecast for Sustainable Land Use Alternative

Route	Description	Vision	Sustainable Land Use	Difference
BRT 1	E Street sbX (with Extension)	10,458	12,165	16.3%
BRT 2	Foothill East sbX	8,485	10,192	20.1%
BRT 3	Foothill West sbX	4,628	5,557	20.1%
BRT 4	Euclid sbX	5,504	6,508	18.2%
BRT 5	San Bernardino Avenue sbX	5,305	6,420	21.0%
BRT 6	Holt/Fourth sbX	5,977	6,770	13.3%
BRT 7	Grand/Edison sbX	2,123	2,386	12.4%
BRT 8	Sierra sbX	1,561	1,893	21.3%
BRT 9	Riverside sbX	6,360	7,342	15.4%
BRT 10	Haven sbX	2,946	3,361	14.1%
Total BRT Routes		53,347	62,594	17.3%
Local and Express Routes		79,336	81,137	2.3%
Omnitrans System Total		132,683	143,731	8.3%

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Chapter 5 System-Wide Transit Corridor Plan

The 2004 System-Wide plan identified seven corridors to be studied for premium transit service and divided the seven corridors into two groups; four corridors were recommended for early implementation and three corridors were slated for long range implementation.

The E Street Corridor was ranked first in the group for early implementation. Omnitrans later conducted an alternatives analysis on the E Street Corridor that led to the adoption of a Locally Preferred Alternative alignment and the selection of Bus Rapid Transit (BRT) as the best mode of operation. Further work is taking the project through the preliminary engineering and environmental assessment phases of the process.

Omnitrans has applied for federal funding for the E Street Corridor after identifying the necessary local funding match. Construction is expected to begin in 2012, with operations planned for 2013.

This 2009 update of the System-Wide Plan has identified three additional corridors for study and possible implementation of BRT or other premium transit service. Getting from the identification of a corridor, through the required studies, identifying funding and bringing the project to fruition requires significant expenditures of Omnitrans' time and other resources. Omnitrans would like to implement premium transit services as quickly as is reasonable but understands that projects must be phased over the next 25 years.

This section summarizes information about the ten identified corridors, highlighting the strengths and weaknesses of each of them. Then, as the earlier Plan did, this section will recommend which corridors should be considered for early implementation and which should await developments which will make the corridor more cost effective and productive.

All ten of the major transit corridors in the San Bernardino Valley identified in this System-Wide Plan exhibit great potential for sbX services that:

- achieve speeds competitive with the automobile during peak commute periods;
- emphasize reliability due to the fact that they either travel in dedicated lanes/ways or have preferential treatment;
- have the shortest possible headways to guarantee short transfer wait times between routes/connecting corridors; and
- are attractive with well-designed vehicles and stations/stops that blend well into adjacent land uses and activity centers.

5.1 Evaluation Criteria

The focus of this chapter is to evaluate the ten major transit corridors based on a variety of issues and criteria presented earlier in the report and then develop a priority list for implementation to horizon year 2035. Justification for the prioritization of the corridors is based on a wide variety of factors including New Starts/Small Starts evaluation criteria which include:

- Mobility Improvements;
- Cost Effectiveness
- Transit Supportive Land Use Policies and Future Patterns
- The corridors are also evaluated by the Very Small Starts evaluation criteria which reward corridors with an automatic "Medium Rating" for FTA Very Small Starts if the corridors include:
  - Substantial transit stations;
  - Traffic signal priority/pre-emption, to the extent, if any, that there are traffic signals on the corridor;
  - Low-floor vehicles or level boarding;
  - "Branding" (distinguishing through marketing and physical characteristics) of the proposed service;
  - 10 minute peak/15 minute off peak frequencies or better while operating at least 14 hours per weekday;

- Are in corridors with existing riders who will benefit from the proposed project that exceed 3,000 per average weekday; and
- Have a total capital cost less than $50 million (including all project elements) and less than $3 million per mile, exclusive of rolling stock.

The System-Wide plan gives priority to corridors that:

- Promote transit oriented development and transit signal priority (TSP)
- contribute to the project development process
- promote the goals of SB 375 and regional Growth Management policies

5.2 Corridor Comparison

Tables 5-1 to 5-4 present a comparison of the ten corridors. Table 5-1 provides a list of Omnitrans routes and other regional transit routes that serve each of the BRT corridors.

Table 5-2 summarizes existing ridership data and future ridership forecasts for the ten BRT corridors. This existing data includes bus stop activity; ridership that would be likely to use the BRT service if it were in place today; total trip origins within one mile of the corridor; and the existing transit mode share. The future data includes similar variables forecast for the year 2035, assuming currently adopted land use forecasts and implementation of the LRTP Vision transit alternative.

Table 5-3 summarizes estimates of the capital costs and operating costs required to design, build and operate the ten BRT corridors. The capital costs include costs for running way (assuming approximately 50 percent exclusive lanes), stations, and vehicles in the ultimate fleet. These costs are converted to annualized costs for the purposes of later calculating a cost effectiveness index for each corridor. This table also includes some productivity measures for the corridors, i.e. operating cost per boarding and boardings per revenue vehicle hour.

Table 5-4 summarizes an estimate of the user benefit attributed to each corridor, in terms of annual hours of user benefit for the BRT system, as compared to a baseline alternative. This data, along with the costs data in Table 5-3, is used to calculate a cost effectiveness index for each corridor, along with a cost effectiveness rating for FTA rating purposes. It should be noted that the cost effectiveness indexes and ratings presented in Table 5-4 are for comparison purposes only, and that the ultimate FTA cost effectiveness index and rating for each corridor will require further detailed analysis of the individual corridors.

Table 5-1: Existing Transit Services and System Connectivity

	1. E Street Corridor	2. Foothill East Corridor	3. Foothill West Corridor	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
Primary Omnitans Route(s) Serving BRT Corridor	2	14	66	83	1 & 19	61	None	67 & 82	22	68, 81 & 82
Other Omnitrans Routes Providing Connecting Services	1,3,4,5,7,8,9 ,10,11,14,15 ,19 & 90	1,2,3,4,5,7, 8,9,10,11,1 5,19,20,22, 61,66,67,7 1 & 90	10,14,15,1 9,20,60,61, 62,63,65,6 7,68,71 & 90	61,62,63, 66,67,68, 71 & 90	2,3,4,5,7,8,9 ,10,11,15,19 ,20,22,28,29 ,61,71 & 90	19,20,28,29, 60,61,62,63, 65,67,68,70, 71,75 & 90	62,63,65 & 68	10,14,15, 19,20,22, 28,29,61, 66,71 & 90	10,14,15, 19 & 90	60,61,66, 67,70,71 & 75
Future BRT Corridors Providing Connecting Services	2 & 5	1, 3, 8 & 9	2, 4, 8 & 10	3, 6 & 7	1, 2, 6, 8 & 9	4, 5, 8 & 10	4 & 10	2, 3, 5, 6 & 9	2, 5, & 8	3, 6 & 7
Other Transit Services Providing Connecting Services	Metrolink, VVTA, RTA, MARTA, Sun Line & Redlands Rail	Metrolink, MARTA & Redlands Rail	Metrolink, Foothill, Gold Line & RTA	Metrolink , Gold Line, OCTA & RTA	Metrolink, MARTA, Redlands Rail	Metrolink, Gold Line, Foothill & VVTA	Foothill, RTA & OCTA	Metrolink & VVTA	Metrolink, RTA & VVTA	Metrolink, Gold Line & RTA

Table 5-2: Corridor Ridership

	1. E Street Corridor	2. Foothill East Corridor	3. Foothill West Corridor	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
Existing Daily Bus Stop Activity[1]	28,402	37,743	17,850	5,690	23,968	16,003	1,535	11,765	7,519	2,760
Existing Transit Trips - Likely to Use BRT	6,237	6,774	3,602	606	2,962	5,165	111	1,601	2,087	284
Existing Daily Transit Trips[2]	20,109	19,130	9,066	3,415	15,164	7,824	1,285	4,155	5,239	2,992
Current Mode Split	1.47%	1.58%	0.67%	0.49%	1.49%	0.59%	0.25%	0.82%	1.21%	0.47%
Travel Growth (2000-2035)	50%	45%	27%	61%	41%	51%	95%	55%	73%	76%
Future Daily Transit Trips[3]	42,032	38,017	18,648	12,870	29,539	20,411	8,340	7,545	13,178	9,728
Potential Future Transit Modal Shares	2.05%	2.17%	1.09%	1.14%	2.05%	1.02%	0.83%	0.96%	1.76%	0.86%
Future Daily BRT Boardings	10,910	9,700	4,640	6,040	5,360	5,870	2,100	1,670	6,760	3,010

[1] Boarding plus alighting activity within one mile of alignment.
[2]Origins and destinations within 1 mile of alignment.
[3]Assumes BRT in corridor for 2035.

Table 5-3: Corridor Capital and Operating Costs

	1. E Street	2. Foothill East	3. Foothill West	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
Total Capital Costs	$241,880,000	$215,300,000	$166,190,000	$179,970,000	$119,190,000	$208,430,000	$179,410,000	$78,990,000	$174,230,000	$109,870,000
Annualized Capital Costs	$19,550,000	$17,400,000	$13,430,000	$14,540,000	$9,630,000	$16,840,000	$14,500,000	$6,380,000	$14,080,000	$8,880,000
Net Annualized Costs	$12,363,000	$10,848,000	$8,463,000	$9,074,000	$5,993,000	$10,251,000	$9,241,000	$4,066,000	$8,925,000	$5,563,000
Operating Cost per Boarding	$2.73	$3.00	$2.92	$2.90	$2.37	$3.16	$6.15	$3.61	$2.76	$3.13
Boardings per Revenue Vehicle Hour	41.2	37.6	38.6	38.7	47.4	35.6	18.3	31.2	40.8	36.0

Table 5-4: Corridor Cost Effectiveness

	1. E Street	2. Foothill East	3. Foothill West	4. Euclid Avenue	5. San Bernardino Avenue	6. Holt Ave./4th Street	7. Grand/ Edison Avenues	8. Sierra Avenue	9. Riverside Avenue	10. Haven Avenue
Daily User Benefits	2,526	1,944	1,021	1,604	1,163	1,784	439	327	1,611	753
Annual User Benefits	778,000	598,900	314,600	494,000	358,200	549,500	135,300	100,600	496,300	231,800
Cost Effectiveness Index	$15.89	$18.11	$26.90	$18.37	$16.73	$18.66	$68.30	$40.42	$17.98	$24.00
Cost Effectiveness Rating	Medium-High	Medium	Medium-Low	Medium	Medium	Medium	Low	Low	Medium	Medium

Corridor by corridor, the following conclusions can be drawn about overall trip-making in the future and about transit potential:

5.2.1 Corridor 1: E Street

Given the ongoing and projected development along Barton Avenue in the city of Loma Linda, it is important to study this area as an ultimate extension to the E Street Corridor. This short segment cannot stand alone as an independent corridor, but can connect important activity centers as an extension to the E Street Corridor. This extension is from the Loma Linda Veterans' Hospital east along Barton Road to California Avenue, and then north to the planned Redlands Rail Station. The extension of the corridor would serve the Loma Linda civic center and many university facilities, and support the planned Redlands Passenger Rail service.

The overall magnitude of trip-making in the E Street Corridor is substantial today due to the concentration of activity centers as described in Chapter 2. Also, because of its central location in the San Bernardino Valley, the E Street Corridor attracts a large number of inter-corridor trips from adjoining travel corridors. For example, a large segment of trips are entering from the Foothill East Corridor and are destined to activities and jobs in central San Bernardino. The E Street Corridor will connect with the Foothill Boulevard East Corridor, the San Bernardino Avenue Corridor and the E Street Extension.

This corridor is currently served primarily by Omnitrans Route 2. Approximately 27,000 daily transit passenger boardings currently occur along Corridor 1's 18.3 mile length, and over 20,000 daily transit trips originate within one mile of the planned BRT alignment. About 6,000 of these existing daily transit trips are likely to use the sbX service. The E Street Corridor is expected to attract over 42,000 daily transit trips by 2035, of which almost 11,000 will use the sbX service.

The introduction of faster premium transit service in the corridor in the future will attract a larger proportion of both captive and choice riders, thereby resulting in a higher mode split for transit. Travel in the corridor is expected to grow about 50% through the year 2035. The current mode split is about 1.5%. This is expected to grow to over 2% by 2035.

The estimated future ridership and the estimated cost effectiveness index of the sbX for the E Street Corridor are the highest of all the corridors, confirming the decision to implement sbX service in the E Street Corridor first. During its first year in service, the sbX operated along E Street with ten minute peak headways is expected to carry an impressive 45 passengers per revenue service hour. As development in the corridor increases the ridership demand will warrant an increase in service to provide five minute headways by the year 2035. This will be the most cost-effective corridor to serve in the horizon year 2035.

5.2.2 Corridor 2: Foothill Boulevard East

Corridor 2 runs 16.6 miles from the Fontana Metrolink station through Rialto and San Bernardino to San Bernardino International Airport (SBI) an the City of Highland, with the northern boundary of the corridor running along Baseline Road and the southern boundary at Merrill Avenue in Fontana and Mill Street in Rialto and San Bernardino.

Corridor 2 will generate a large number of internal and inter-corridor trips because it overlaps Corridor 1 (E Street) in downtown San Bernardino. Major activity centers in Corridor 2 include the Fontana Metrolink station, a major transfer point for Omnitrans riders, San Bernardino Civic Center and the airport. Additionally, this corridor will serve a highly transit dependent population and a major redevelopment area in Rialto. This corridor is well positioned from a system connectivity standpoint with other planned premium transit corridors, and travel in the corridor is expected to increase about 45% by 2035. In addition to the E Street Corridor, this corridor connects to the Foothill Boulevard West, Riverside Avenue and Sierra Avenue Corridors.

The Foothill Boulevard East Corridor is a strong transit corridor today that is served primarily by Omnitrans Route 14, and with partial coverage of the corridor provided by Omnitrans Routes 3, 4, and 15. More than 37,000 daily transit passenger boardings occur in Corridor 2 today, and over 19,000 daily transit trips originate within

one mile of the planned BRT alignment. Over 6,700 of these existing riders would be expected to use a sbX service in the corridor. By 2035 the corridor should attract over 38,000 transit trips per day. Almost 10,000 of those trips will use the sbX service.

By 2035, the Foothill Boulevard East Corridor is expected to warrant the service required to provide five minute headways, which will attract about 38 passengers per revenue service hour. The introduction of faster premium transit service in the Foothill Boulevard East Corridor in the future will increase both captive and choice riders, increasing the mode split for transit from the current 1.6% to almost 2.2%.

The estimated future ridership and the estimated cost effectiveness index of the sbX for the Foothill Boulevard East Corridor are second only to the E Street Corridor, so this corridor warrants strong consideration to be included in the next phase of development of the sbX system.

5.2.3 Corridor 3: Foothill Boulevard West

Corridor 3 is the western piece of the east-west oriented Foothill corridor. Its 16.2 miles connects directly to the Foothill Boulevard East Corridor and overlaps with the Euclid Avenue, Haven Avenue, and Sierra Avenue Corridors. This corridor is a major transit interlink corridor because it is anchored on the west by the Montclair Transcenter, which includes the Montclair Metrolink station, a planned extension of the Metro Gold Line and a major transit transfer hub, and on the east by the Fontana Metrolink station.

Corridor 3 runs through areas of high population and employment. However, the relative affluence of the residents of this corridor are reflected by the existing mode share of less than 0.7 percent, and a future mode share of just over 1 percent with the introduction of BRT services.

There is a considerable amount of developable land along Foothill Boulevard in the corridor. The owners of Victoria Gardens are considering improving connections to the corridor to facilitate transit access to their complex.

Corridor 3 is a key transit corridor that connects transit modes and operations in Los Angeles County with the Omnitrans corridors. Key transfers to other transit services occur at the Fontana and Montclair Transit Centers. Trip growth in this corridor is expected to be moderate, with an increase of about 27 percent by 2035, which is the lowest growth projection of the ten BRT corridors.

The Foothill West Corridor is an emerging transit corridor that is served primarily by Omnitrans Route 66. Over 15,000 daily transit passenger boardings occur in Corridor 3 today. This includes total daily boardings for Omnitrans, Metrolink Commuter Rail, and other operators. Over 9,000 daily transit trips originate within one mile of the planned BRT alignment. Almost 3,500 of those daily transit trips are expected to use a future sbX line in the corridor. By 2035 the corridor could host over 18,000 daily transit trips, with about 4,600 of those trips on the sbX.

The estimated future ridership and cost effectiveness index of the sbX for the Foothill Boulevard West Corridor are ranked relatively low as compared to the other nine corridors, mainly because of the demographics of the existing population in the corridor. A major change in the development plans will be required to warrant near-term recommendation to develop BRT services in this corridor.

5.2.4 Corridor 4: Euclid Avenue

This 17.9 mile long north/south corridor in the West Valley has many areas that are largely undeveloped today. It has been designated for its future growth potential. That growth has been slowed by the current economic situation, but the development plans are expected to be implemented when the economy improves. This corridor is centered on Euclid Avenue as the preferred arterial for the BRT alignment, over Mountain and Central Avenues. The Agricultural Preserve in the Cities of Chino and Ontario will be developed in phases over the next 10 to 20 years. Ultimately there may be a population of 130,000 on what is essentially empty land today. The Chino Transit Center and Ontario Transit Center will be major transit hubs in the corridor. The corridor also serves the Corona and Upland Metrolink Stations. Connections to those stations will be important to both current and future residents, as they will provide additional transit

options for longer trips. Historically, this area has had a significant number of commuters into Orange and Los Angeles Counties.

The Euclid Corridor will connect with the Foothill Boulevard West, Holt Avenue/4th Street and Grand/Edison Avenues Corridors.

The Euclid Avenues Corridor is not a strong transit corridor today, being served by Omnitrans Route 83. Fewer than 5,000 daily transit passenger boardings occur in Corridor 4 today and barely 3,400 daily transit trips originate within one mile of the planned BRT alignment. However, as the area develops, overall travel will increase by over 60% and new residents and employment centers will generate new transit riders. By 2035, with the extension of transit services to the Agricultural Preserve area and to the Corona Metrolink Station, the corridor is expected to carry almost 13,000 transit trips per day, with over 6,000 of those daily trips on the sbX service.

The estimated future ridership and cost effectiveness index of the sbX for the Euclid Corridor are both ranked near the middle of the prospective BRT corridors, based on the achievement of current development plans in this corridor. Development of this corridor could be complicated by the fact that it extends into Riverside County to provide a major terminal.

5.2.5 Corridor 5: San Bernardino Avenue

Corridor 5 is centered along San Bernardino Avenue from the South Fontana Transfer Center to the western boundary of the E Street Corridor. This strip is generally bounded by Merrill Avenue on the north and Interstate 10 on the south. At 11 miles, this is a relatively short corridor, but it has the potential to be a very productive corridor for sbX. This corridor will connect with the Holt Avenue/4th Street, Riverside Avenue, Sierra Avenue and the E Street Corridors.

The San Bernardino Avenue Corridor is a strong transit corridor today that is served primarily by Omnitrans Route 19, and with partial coverage provided by Omnitrans Routs 1. More than 22,000 daily transit passenger boardings occur in Corridor 5 today, and over 15,000 daily transit trips originate within one mile of the planned BRT alignment. Almost 3,000 of these existing riders would be expected to use a sbX service in the corridor. It is a growing corridor, expecting an increase of over 40% in travel by 2035. By 2035 the corridor may host almost 30,000 daily transit trips, of which over 5,000 are expected to use the sbX service. This would bring the transit mode share from the current level of 1.5 percent to over 2%.

The introduction of faster premium transit service in the corridor in the future will greatly enhance the transit options of its residents, workers and visitors. The corridor has a suitable supply of vacant, developable land. Activity centers in the corridor include the major medical facilities at Fontana Kaiser and Arrowhead Medical Center. San Bernardino Valley College is in the corridor. The City of Colton has an existing specific plan and a redevelopment area along Mt. Vernon.

The estimated future ridership of the sbX for the San Bernardino Avenue Corridor ranks near the middle of the prospective BRT corridors. The estimated cost effective index ranks second only to the E Street Corridor, based on the existing demographics and the relatively short corridor length. This corridor warrants consideration for development in the near future.

5.2.6 Corridor 6: Holt Ave/4th Street

Centered along Holt Avenue and 4th Street, the corridor runs from the Pomona Transfer Center to the South Fontana Transfer Center. The corridor has potential for transit interlinks between Omnitrans and other operators with these two transit centers plus the Ontario Transit Center. This corridor connects with the Euclid, Haven, Sierra and San Bernardino Avenues Corridors. Major activity centers in this corridor include the Ontario International Airport, Ontario Convention Center, Ontario civic center and Ontario Mills Mall. There are commercial areas along Holt Avenue and business parks on Inland Empire Drive.

The Holt/4th Street Corridor is a relatively strong transit corridor today that is served primarily by Omnitrans Route 66. Almost 13,000 daily transit passenger boardings occur in Corridor 6 today and almost 8,000 daily transit trips originate within one mile of the planned BRT alignment. Over 4,000 of the existing daily transit trips are likely to

use sbX service. By 2035 the corridor should see over 20,000 daily transit trips of which almost 6,000 will be on the sbX. The corridor likely will see a 50% increase in travel activity by 2035.

The estimated future ridership and cost effectiveness index of the sbX for the Holt/4th Street Corridor are both ranked near the middle of the prospective BRT corridors, based on the achievement of current development plans in this corridor. Development of this corridor could be complicated by the fact that it extends into Los Angeles County to provide a major terminal.

5.2.7 Corridor 7: Grand/Edison Avenues

This 17.4 mile east-west corridor is essential to connect the future developments in the Agricultural Preserve areas with Chino/Chino Hills and possible inter-county transit connections to Los Angeles and Orange Counties. A likely point of connection will be between the Chino Transit Center, across the county line to the campus of Cal Poly - Pomona.

Much of this corridor lies within the agricultural preserves of Chino and Ontario. Significant development is planned for the preserve, with 130,000 new residents expected within 20 years. Activity centers include the Chino Community Hospital and the Chino Civic Center Transfer Center. This corridor connects with the Euclid Avenue and Haven Avenue Corridors. This corridor will also extend into Riverside County to serve the Limonite Shopping Center.

The Grand/Edison Avenues Corridor is an emerging transit corridor. Because the base of current trip-making is so low and considerable development is planned, travel in the corridor is expected to nearly double by 2035. Only about 1,100 daily transit passenger boardings occur in this corridor today and fewer than 1,300 daily transit trips originate within one mile of the planned BRT alignment. By 2035 the corridor should carry over 8,000 daily transit trips, about 2,000 of which will be on the sbX service.

The introduction of faster premium transit service in the corridor in the future will not only provide additional non-auto options for residents, workers and visitors but could also shape land use decisions in the corridor. The cities are reserving land for transit stations.

The estimated future ridership and cost effectiveness index of the sbX for the Grand/Edison Avenues Corridor are both ranked at or near the bottom of the prospective BRT corridors. As such, this corridor should not be considered for implementation unless and until development plans are adjusted to increase the ridership potential of the corridor. Otherwise, this corridor should be scheduled near the end of the development schedule for the sbX system.

5.2.8 Corridor 8: Sierra Avenue

The Sierra Avenue Corridor runs north-south for 7.6 miles in the center of the San Bernardino Valley. This corridor intersects the Riverside Avenue, Foothill Boulevard East, Foothill Boulevard West, Holt Avenue/4th Street and San Bernardino Avenue Corridors. It will serve the Fontana Metrolink Station and Omnitrans' South Fontana Transfer Center.

The Sierra Avenue Corridor is currently served by Omnitrans Route 82 and about 10,000 daily transit boardings currently occur within the corridor. However, most of these boardings are associated with transfers at the two major transfer centers, and only 4,100 transit trips currently originate within the corridor, 1,400 of which are likely to use a future sbX premium transit service. By 2035 nearly 6,000 daily transit boardings will occur along this short corridor, with about 1,700 of them likely to use the sbX service.

The estimated future ridership and cost effectiveness index of the sbX for the Sierra Avenue Corridor are both ranked at or near the bottom of the prospective BRT corridors. As such, this corridor should not be considered for implementation unless and until development plans are adjusted to increase the ridership potential of the corridor. Otherwise, this corridor should be scheduled near the end of the development schedule for the sbX system.

5.2.9 Corridor 9: Riverside Avenue

The Riverside Avenue Corridor runs for 16.4 miles in the center of the San Bernardino Valley. This corridor serves an area of moderately high transit usage serving much of the City of Rialto and connecting to Colton and the City of Riverside in Riverside County. This corridor

intersects the Sierra Avenue, Foothill Boulevard East, and San Bernardino Avenue Corridors.

The Riverside Avenue Corridor, which is currently served by Omnitrans Route 22, currently carries about 7,500 daily transit boardings. Over 5,200 daily transit trips originate within one mile of the planned BRT alignment, 2,200 of which are likely to use a sbX premium transit service. By 2035 over 13,000 daily transit boardings will occur along this corridor, with about 7,000 of them on sbX service.

This corridor is expected to see significant growth, over 70%, in travel activity by 2035.

The estimated future ridership of the sbX for the Riverside Avenue Corridor is among the highest of the ten corridors and the cost effectiveness index ranks near the middle of the prospective BRT corridors. Development of this corridor could be complicated by the fact that it extends into Riverside County to provide a major terminal.

5.2.10 Corridor 10: Haven Avenue

The Haven Avenue Corridor runs north-south for 10.4 miles from Chaffey College in the north to the Ontario International Airport. This corridor will connect to the Foothill Boulevard West, Holt Avenue/14th Street and Grand/Edison Avenues Corridors. Development plans for the area surrounding the Ontario Airport include high rise office and condo/apartments.

The corridor currently receives partial service coverage from existing Omnitrans Routes 68, 81, and 82. With little transit ridership today, 2,200 daily boardings and 3,000 transit trips currently originate within the corridor, travel in the corridor will grow over 75% by 2035. Daily transit ridership is expected to near 10,000, with about 3,000 of those trips on sbX.

The estimated future ridership and cost effectiveness index of the sbX for the Haven Avenue Corridor are ranked relatively low as compared to the other nine corridors, mainly because of the demographics of the existing population in the corridor. However, plans for major development exist in the corridor, and these plans can be adjusted to improve the attractiveness of transit opportunities for BRT services in this corridor.

5.3 Roles and Responsibilities

Over the next 25 years, these ten sbX corridors will become viable BRT and Rapid Transit Corridors. As these corridors become eligible to move into project development there are a variety of opportunities to promote the sbX corridors. Some preliminary examples include:

- **Local land use plans and policies identify station areas and corridors.** FTA and Omnitrans understand that the inclusion of the corridors and stations into land use plans demonstrates support of these corridors.
- **Include right-of-way into local land use plans.** Right-of-way dedication, either by retaining currently unused right-of-way or by agreements with developers is a clear example of local dedication to the transit network and meets FTA criteria for local funding match.
- **Include Intelligent Transportation Systems (ITS) into local land use plans.** Cost efficiency of the transit network can be increased if roadways, infrastructure and ITS (including Transit Signal Priority (TSP), fiber network, conduits for electrical and water for stations) have been identified and included in land use plans.
- **Local Staffing Support.** Cities can provide staffing support to advance projects and provide streamlined permit processing that shows local funding commitment.
- **Reduce timeline for environmental clearance.** Corridors and station locations identified in local land use plans should include clearance for environmental issues. Known cultural resources, biological issues, sensitive noise receptors, aesthetics issues and potential conflicts should be identified early. Traffic issues should be identified with resolution for reduced left turn lanes, roadway access to businesses, change in traffic patterns and traffic flow paths, as well as System-Wide planning for road widening, loss of sidewalk sizes or change in setbacks, road frontage requirements etc. in land use plans.

5.4 Conclusions and Phasing Plan

Under the New Starts/Small Starts Project Development Process, the length of time from

when a project begins an alternative analysis and when a project begins revenue operation is on average 6-12 years. The development of the E Street Corridor has taken 10 years and the System-Wide Plan identifies key elements to speed projects through the development process. The next federal transportation authorization bill (expected in 2010 or 2011) is also expected to speed up the project development process for Small Starts and Very Small Starts projects. It is expected that all ten corridors are now or will become viable for development over the next 25 years. This section of the System-Wide Plan prioritizes the corridors into an early implementation schedule and a later implementation schedule, based on the analysis presented in this report.

The analysis presented shows that E Street still remains the highest priority corridor for initial development of the sbX system. The E Street Corridor currently has the highest number of existing transit trips among the ten corridors in the Omnitrans system and has the highest potential for additional new transit riders. The corridor has significant opportunities to influence redevelopment, has a high number of transit dependents, and has the potential to improve System-Wide connectivity.

From a systems perspective, the E Street Corridor is indeed the "centerpiece" of the Omnitrans system and regional transit in the San Bernardino Valley. Its north-south orientation through the Cities of San Bernardino and Loma Linda creates opportunities for linkages with the other major east-west Omnitrans transit corridors, Metrolink commuter rail and other operators such as Riverside Transit Authority, Mountain Area Regional Transit Agency, Victor Valley Transit Authority, Sun Line Transit, and the Redlands Rail Corridor.

Table 5-5 lists the ten BRT corridors in order of their implementation priority, along with the primary rationale for the priority ranking.

Priority Corridors

Based on the analysis presented in section 5.2 Corridor 2 Foothill Boulevard East and Corridor 6 San Bernardino Avenue are designated as having the highest priority for early implementation. These results are primarily due to the demographics and existing transit ridership of the eastern portion of the San Bernardino Valley. Income levels in the east are generally lower, and existing transit mode shares are higher in the eastern half of the valley.

Corridor 2 - Foothill Boulevard West is the strongest corridor and most viable to receive Small Starts Funding, due to a high cost effectiveness rating. The Corridor is also prioritized for development as it serves a large transit dependent population, has high levels of system connectivity, and has the highest number of riders compared to the other corridors. Given the length of the corridor, the Small Starts process is the likely implementation process.

Corridor 5 - San Bernardino Avenue, as the most cost effective corridor after E Street, should also be progressed through project development, as it serves multiple key activity centers in San Bernardino, Colton, and Fontana. The shorter length of the corridor results in less capital costs compared to the other corridors, and the corridor has the third highest ridership of all the corridors. Development of the corridor can progress either under the Small Starts process or the Very Small Starts process.

Near Term Corridors

Based on the analysis in Section 5.2, Corridor 3 - Foothill Boulevard West and Corridor 5 - Holt Avenue/4th Street, are prioritized for development in the near term.

Corridor 3 Foothill Boulevard West is scheduled for development in the near term. The corridor could be elevated in priority if development occurs in the corridor in a more accelerated manner. While the corridor contains high levels of employment and population, the lowest level of transit growth is expected in the corridor. The corridor is a key connection with other planned corridors with the Montclair Transcenter, and developable land exists on Foothill Boulevard. This corridor could potentially be included with Foothill Boulevard East to provide greater east-west continuity through the Valley. The corridor is heavily oriented to automobile travel and access to properties along the corridor from transit will need to be addressed.

Table 5-5: Recommended Phasing Plan for Major Transit Corridors

Corridor Ranking	Primary Rationale
Recommended Phasing Plan for Priority Implementation	
Corridor 1: E Street	Strong transit ridership potential, significant opportunity to influence redevelopment, significant new travel choices to disadvantaged, good system connectivity potential.
Corridor 2: Foothill East	Second best ridership potential, 73 percent growth projected in population and trip-making, good system connecting potential.
Corridor 5: San Bernardino Avenue	San Bernardino Avenue Corridor creates a southerly alignment for premium transit services, connections to the E Street Corridor, new travel choices for low income/disadvantages groups, moderate employment and population growth.
Recommended Phasing Plan for Near Term Implementation	
Corridor 3: Foothill West	High existing population and employment, good system connectivity potential to Los Angeles County Operators.
Corridor 6: Holt Avenue/4th Street	Third highest transit ridership potential, significant new travel choices for transit dependent, system connections to Los Angeles.
Recommended Phasing Plan for Mid Term Implementation	
Corridor 4: Euclid Avenue	Chino Transit Center Connections to Corona Metrolink Station could move higher on list if development of Agricultural Preserve accelerates and developers emphasize transit alignments as integral part of development phasing.
Corridor 9: Riverside Avenue	Connection into Downtown Riverside, opportunities to influence developments in northern portions of the Valley, good Cost Effectiveness rating.
Recommended Phasing Plan for Long Term Implementation	
Corridor 7: Grand/Edison Avenue	Good opportunities to influence new developments in Agricultural Preserves, good intercounty connections to Los Angeles County and SR 57.
Corridor 8: Sierra Avenue	Good system connectivity potential to other Corridors, opportunities to influence developments in northern portions of the Valley.
Corridor 10: Haven Avenue	Good opportunities to influence new developments in Agricultural Preserves, and around the Ontario airport. High growth in transit and low investment cost.

Corridor 6 Holt Avenue/4th Street is a strong corridor for transit usage today, and serves a number of key activity centers. It also services two Metrolink lines and is a strong connectivity corridor for travel into Los Angeles County. As one of the longest corridors, the higher cost of the corridor lowers the overall cost effectiveness rating.

Mid Term Development

Corridor 4 Euclid Avenue is the fourth strongest corridor, but this ranking relies upon development in the Agricultural Preserve that has not yet occurred. This corridor could be moved up the priority list if development of the Agricultural Preserve accelerates and developers give high priority to reserving transportation right-of-way for future mass transit investments. This corridor is also viable for development under the Very Small Starts process, although the funding restrictions presented under Very Small Starts would most likely require that only a portion of the corridor be developed.

Corridor 9 is also a strong corridor but is dependent upon development in the northern portion of the valley. It serves the key travel market into downtown Riverside, and has a medium cost effectiveness rating. Planned growth is a major contributor to the development of the corridor.

Long Term Corridors

The remaining three corridors exhibit characteristics that justify the implementation of premium transit services over a longer time period. Corridor 7 Grand/Edison Avenues serves the Chino and Ontario Agricultural Preserve

areas and could be elevated in priority if development occurs in the corridor in a more accelerated manner and if development plans are oriented to promote transit. It also is a strong corridor for linkages to Los Angeles County. Corridor 8 - Sierra is dependent upon developments in the northern portions of the valley, and on implementation of other corridors. Corridor 10 Haven Corridor will become viable once the Agricultural Preserve area develops and as the Ontario Airport area develops. This corridor also has a high cost effectiveness rating due to its low total cost. Additionally, as discussed in Section 3.5 these corridors may benefit from increased local bus service to help build the levels of existing transit ridership.

5.5 Potential Extensions and Enhanced Connectivity

In addition to the ten major transit corridors discussed in this report, two transit extensions and connections to adjacent counties create opportunities to serve new travel markets and complete important connections to transit infrastructure outside of San Bernardino County. Table 5-6 lists the potential extensions and additional system enhancements that have been identified in this transit System-Wide study and previous studies.

There are two identified potential extensions of corridors and multiple system connectivity enhancements, as other planned transit projects progress through project development. The E Street Extension would connect the current Medical Corridor on Barton Road to the planned Redlands Passenger Rail project. The E Street Extension is recommended for prioritization in conjunction with the development of the Redlands Passenger Rail. The extension is entirely within the City of Loma Linda and local land use policies may provide an opportunity for transit oriented development.

The second identified extension of Corridor 7 Grand/Edison Avenue to Cal Poly Pomona would connect the growing commercial areas of the Chino Hills civic area and the planned Agricultural Preserve to the campus of Cal Poly Pomona in neighboring Los Angeles County. This extension presents the opportunity to connect to a key activity center.

Table 5-6: Extensions to Corridors for Enhanced System Connectivity

Extension	Description/Rationale
Extension from Loma Linda to Redlands Passenger Rail California Station	Development along Barton Road creates opportunity for extension of E Street transit to the east; the Redlands Passenger Rail California Station would provide an anchor and support passengers using Redlands Rail into Loma Linda and the Medical Corridor.
Grand/Edison Avenue Connection to Los Angeles County and Cal Poly Pomona	The Grand/Edison Avenue Corridor could be extended into Cal Poly Pomona providing access into Los Angeles County from the Chino Hills and Chino Area.
Other Potential Extensions	
Metrolink Extension to Downtown San Bernardino Transit Station	The planned Metrolink Extension from the San Bernardino Metrolink Station to the Downtown Transit Station site is currently entering into preliminary engineering. sbX Corridors 1, 2 and 5 would benefit from the extension.
Connections to High Speed Rail at Ontario Airport and Downtown San Bernardino	Corridor 6 will provide access to the Ontario airport, and any planned high speed rail stations located at the airport. A potential high speed rail connection into downtown San Bernardino would serve the new Transcenter site.
Connections to Big Bear Aerial Tram	The Big Bear Aerial Tram to the City of Highland would benefit Corridor 2.
Metro Gold Line Extension to Montclair	The Gold Line Rail Extension planned to reach the Montclair Plaza would benefit Corridor 3.
Metro rail Gold Line Extension to Ontario Airport	The further Gold Line Rail Extension to the Ontario Airport would serve Corridors 4, 6 and 10. The extension is currently undergoing a feasibility study.
Connections to Anaheim/Las Vegas Maglev	Development of a Maglev system creates an opportunity for increased transit connections at the Ontario Airport. Any potential Maglev connection at the Ontario Airport would support Corridors 6 and 10.

Currently, SANBAG is undergoing preliminary studies to connect the Metrolink from its current terminus at the San Bernardino Station the additional mile to the planned Downtown San Bernardino Transit Station site at Rialto and E Street. This would provide a beneficial connection to the E Street Corridor as well as potential enhancements to the Foothill East and San Bernardino Avenue Corridors.

Additional system enhancements include the extension of the Metro Gold Line, a light rail system that is currently planned to extend to the Montclair Plaza from its current terminus in Los Angeles County in Pasadena. An additional extension is currently being evaluated to the Ontario Airport. A potential High Speed Rail connection could connect the Ontario Airport to San Francisco, Los Angeles, and San Diego. The Anaheim to Las Vegas Maglev is also planned with a station at the Ontario Airport and would connect commuters to the Anaheim area. The Big Bear Aerial Tram would connect the city of Highland to the resort community of Big Bear in the San Bernardino Mountains. Depending on the alignment, the aerial tram could connect to the Foothill East Corridor.

5.6 Conclusion

In conclusion, this System-Wide Transit Corridor Plan provides a solid basis for Omnitrans' ongoing development of premier transit corridors to serve the San Bernardino Valley over the next 25 years. Omnitrans will continue these efforts through the FTA project development process and in coordination with local jurisdictions and other regional partners.

Chino	
Feb-92	
Maximum Density	
	Residential Densities up to 24 DU/AC
Transit Policies	
	Action A3-4.1.2 Shuttle Service. Develop and offer incentives to employment centers which provide, operate, and maintain shuttle service from local Park-and-ride facilities, the Montclair Transcenter, and possible future commuter rail terminals, to the City's civic center area. Action A3-4.2.1 Ridesharing Match Service. Require employers with 100 or more full-time employees to participate in ridesharing matching services as a condition of business permit approval and business licensing. Participation includes: land dedications for park-n-ride facility, in lieu fees, and active employee encouragement programs. Action A3-4.2.2 Shuttle service. Require employers with 100 or more full-time employees and major retailers to provide shuttle service from local park-n-ride facilities to the employment or shopping center. Action A3-5.1.2 Fee Assessments. Establish fee assessments for new development projects not providing transit facilities; base fees on anticipated transit trip generation. Encourage employers to pay for transit passes for their employees who agree not to drive to work. Policy P3-4.1 TDM Facilitators, Inducements, and Infrastructure Require all new industrial and commercial developments to be aware of and, as appropriate, participate in TDM programs.
Parking Management Strategies	
	Action A3-4.1.5 Park-n-Ride. Investigate the possibility of locating park-n-ride or similar facilities along SR60, SR71 and the Euclid Avenue corridors. Possible sites could include existing parking structures and surfaces which are utilized mainly during evening or weekends, (e.g. fraternal meeting houses, religious facilities, movie theaters, or public properties). Establish a program to assess fees for the land acquisition, construction, and maintenance of such parking facilities if none currently exist. Action A3-4.1.6 Park-n-Ride Facilities. Require large developments (commercial or industrial development with on aggregate of 100 or more employees) to either dedicate land or participate financially to assist in the development of future park-n-ride facilities.
TOD Policies	
	The City's overall land use pattern shall street higher density development in the Central portion of the City and along Euclid Avenue, and lower density development in the outlying areas. Higher density residential development shall be located conveniently to major circulation and transportation corridors such arterial streets. Densities shall, in general, decrease as the distance from major arterials increases. Shopping areas which serve a community-wide function shall be located close to or along Central Avenue. Shopping centers which serve the daily shopping needs of an immediate neighborhood shall be located away from Central Avenue, but they should be no closer to each other than one mile…
Urban Design Policies	
	Action A3-4.1.4 Pedestrian Facilities. Require sidewalks on arterials and other roadways within industrial and commercial areas. Link bus loading bays, employment centers, and employee services (restaurants. etc.) with sidewalks. Buildings shall be well designed, shall respect the suburban image of the community and shall be designed with an awareness of existing neighboring buildings. appropriate architectural relief will be encouraged, with· large expanses of blank, unrelieved walls being avoided, especially where fronting on a major street. To the maximum extent possible, land use patterns shall be planned so as to minimize Vehicles miles traveled. Higher density projects shall be kept to a small scale (number· of units, heights, .etc.) and shall, in general, reflect design characteristics of single family homes.
Growth Management	
Regional Coordination	
	Action A3-5.1.10 SCAG - City of Chino Regional Commuter Rail Study. Work with SCAG to include the Southern Pacific, Chino Branch and the Santo Fe Rail Line in its regional commuter rail study.
Financial Strategies	
	The City shall work closely with developers "and other interested parties to develop means by which needed capital facilities can be provided on a long term basis at little or no capital cost to the City. This could include the use of special assessment districts, developer reimbursement techniques. Private-public joint ventures, tax increment financing (redevelopment), and the such. The City shall explore alternative financing techniques which are not subject to the provisions of recent tax legislation such as Proposition 13 and Proposition 4.

Chino Hills	
1994	
Maximum Density	
	Residential Densities up to 35 DU/AC
Transit Policies	
	Local transit services should be expanded to serve more of the residential areas of Chino Hills and provide access to the major new developments to be built under the Land Use Plan. These new local services should include: Service along Peyton Drive from Riverside Drive to Soquel Canyon Road to Central, and along Central Avenue to Chino Hills Parkway; and increased frequency on Omnitrans route #72 along Grand Avenue, Chino Hills Parkway, and Pipeline Avenue. In addition to these local services, regional transit service should be provided to provide transit access to other counties. These regional services should include: Grand Avenue service from Chino to Diamond Bar, passing through Chino Hills; Carbon Canyon Road service from Chino to Brea, including the Brea Mall passing through Chino Hills; The Chino Valley Freeway commuter express service to Los Angeles via SR-60; and Park-and-Ride lots near the Chino Valley Freeway.
Parking Management Strategies	
	Park-and-ride areas shall be provided at village cores, general commercial areas and mixed land use areas. These facilities shall be designed to maximize security and provide ease of access. Each park-and -ride lot shall have a capacity equal to 10% of the required parking of the adjacent commercial area, except that no more than 50 spaces per facility shall be constructed. All park-and-ride lots shall be acquired, constructed and maintained by the appropriate local entity.
TOD Policies	
Urban Design Policies	
	Bus turnouts and bus shelters shall be provided in village core areas and other commercial, industrial and public use areas. These facilities shall be designed to maximize security features and shall be located in proximity to both traffic signals and pedestrian crosswalks, so as to provide for ease of ingress for buses and ease of access for pedestrians, respectively.
Growth Management	
	Policy 1-2. Preserve significant natural features such as ridges, knolls, and vistas, Including those identified on the City of Chino Hills Visual and Scenic Resources Diagram, through special development standards and guidelines.
Regional Coordination	
	Policy 3-8. Work with local agencies and jurisdictions to promote employment growth coordinated with the availability of adequate housing and transportation. Objective 3-1. Continue to strive towards the Southern California Association of Governments (SCAG) projected jobs/housing ratio for the year 2010 for the West San Bernardino Valley, which includes the city of Chino Hills, of 1.16 jobs per housing unit.
Financial Strategies	

Colton	
May-87	
Mixed Use Designation	
	Special Designation – Multi Use area This area has been established along the Mount Vernon corridor for the purpose of creating a long-term vehicle for upgrading the economic and aesthetic environment. The multi-use area designation permits a two-pronged approach by allowing existing parcels to be used for residential or commercial activities subject to aesthetic upgrades and by encouraging more significant residential and commercial projects in the future using density bonuses and design modifications based on the size of the development site. The multi-use designation is not intended to create an immediate or near term transformation of the Mount Vernon Corridor, but rather to establish significant investment and community improvement opportunities which may be eventually realized as surrounding land costs continue to increase.
Maximum Density	
	Residential Densities up to 22 DU/AC
Transit Policies	
	Goal 2: Encourage the use of alternative transportation modes. Policy 2.1: Continue to cooperate with Omnitrans for the provision of public bus service in the planning area. Policy 2.2: Establish bus Shelters at Omnitrans stops to increase public recognition and use of the local and regional transit system. Policy 2.3 Cooperate with Caltrans and the County of San Bernardino in providing sites and improvements for park-and-ride facilities. Policy 2.4: take a leadership role in regional planning efforts to provide community rail service throughout the planning area, while protecting railroad right-of-way. Implementation Measure 3: Transportation Demand Management (TDM): Following the air quality management plan for the south coast air basin, employers of over 100 employees will be involved in a program aimed at reducing the number of vehicles using the roadway system during peak hours though vanpooling , ride sharing, staggered work hours and other methods. Public transportation linkages between residential areas and major commercial corridors are necessary to make purchase opportunities available to all segments of the community.
Parking Management Strategies	
	Implementation Measure 8: Off-street (parking) requirements: the City's Zoning Ordinance includes off-street parking requirements for various types of development, allowances for parking reductions of development incentives where effected demand management programs are utilized, and allowances for joint use of parking facilities where an appropriate mix of land uses exist. Establish minimum improvements and standards, such as off-street parking, to be required on all properties based on the scale of operations and proposed development.
TOD Policies	
Urban Design Policies	
	Well-designed human-scaled commercial developments featuring an attractive and efficient pedestrian environment should be encouraged as they add to the responsiveness of commercial growth to localized needs.
Growth Management	
Regional Coordination	
Financial Strategies	
	The City shall seek and utilize any available Federal funds and programs in implementing qualifying portions of the Land Use Element and other elements of the General Plan. This includes taking advantage of the "Enterprise Zone" designation to be granted along the Agua Mansa and Mount Vernon corridors in the near future.

Fontana	
Oct-03	
Mixed Use Designation	
	Regional Mixed Use (RMU) 0.1 – 1.0 FAR for non-residential; 12-24 du/acre for residential Preferred Mix and Range of Uses: 10-30% retail; 5-15% office; 15-30% light industrial/business park; 25-35% residential; 4-6% public open space.
Maximum Density	
	Residential Densities up to 24 DU/AC
Transit Policies	
	Implement traffic signal systems and intelligent transportation systems (ITS) components (not limited to signal coordination, highway advisory radio, closed circuit television, emergency vehicle signal preemption, etc.) along arterial roadways and sub-areas, in accordance to the City's Traffic Signal System Conceptual Buildout Plan and in compliance with regional and appropriate ITS Architecture Master Plans. To encourage transit ridership and transportation demand management including carpooling, required vanpool parking spaces, plan for the provision of additional transportation centers to be used as a park-and-ride for ridesharing, high-occupancy vehicle lanes, regional bus and passenger rail services. Recognize alternative and private transportation services (vans, buses, shuttles, taxis and limousines) as an integral part of public transportation. Where needed and appropriate, require new development to provide transit facilities and accommodations, such as bus shelters and turnouts, consistent with regional agency plans and existing and anticipated demands. Encourage commuters and employers to reduce vehicular trips by offering incentives such as reduced price transit passes and preferential parking for ridesharing. Provide appropriate transportation terminal facilities for inter-city and regional travel by public and private transportation modes.
Parking Management Strategies	
	Parking areas shall continue to be buffered from the street and provide, where practical, a pedestrian spine for safe access to shopping and activity areas.
TOD Policies	
Urban Design Policies	
	Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values. Commercial and industrial uses adjacent to or within designated corridors shall be developed and revitalized to reflect contemporary design standards as Buildings in activity centers shall be oriented toward major thoroughfares, sidewalks and public spaces with convenient but not visually dominating parking on site. Activity centers should be linked with residential neighborhoods and be accessible by multiple modes of transportation. Areas adjacent to freeway and major arterial corridors shall be given special land use and development standards guidance. Downtown, its Metrolink Station and Transit Plaza, and the surrounding community shall be accessible and connected by multiple modes of transportation including pedestrian, bicycle, transit and automobile. Require street dedications from adjacent properties when the land is necessary for additional transportation capacity and enhanced mobility for the welfare A well-integrated network of bike and pedestrian paths should connect residential areas to schools, parks, and shopping centers Major arterial highways shall be improved according to customized design guidance within and adjacent to public rights-of-way. Adopt arterial streetscape improvement plans as part of the City's Capital Improvement Program and Capital Re-Investment Program. Adopt design guidelines for Foothill Boulevard, Valley Boulevard and Sierra Avenue that incorporate the unique qualities of each thoroughfare.
Growth Management	
Regional Coordination	
	Work with Caltrans, San Bernardino County, and neighboring cities to ensure that functional and aesthetically pleasing design of transportation corridors is consistently implemented (see Action 1, above, related specifically to the I-10 corridor). Continue to coordinate transit planning with the Southern California Association of Governments (SCAG), the San Bernardino Associated Governments (SANBAG), the Los Angeles County Metropolitan Transportation Authority (MTA), the Southern California Regional Rail Authority (Metrolink), Omnitrans and adjacent communities. Work with the Caltrans for Transportation Enhancement Activities funding from TEA-21 (Transportation Equity Act, 1998). Coordinate street system improvements and traffic signalization with regional transportation efforts in particular on roadways that are at the City's boundaries, are shared with neighboring jurisdictions, and/or are part of regionally significant corridors including those that are on Congestion Management Plan routes. Continue to support the regional bus system to provide intra-city service, inter-city service to major employment centers, and connection to other regional transportation transfer points.
Financial Strategies	

Grand Terrace		
Dec-88		
	Mixed Use Designation	
		Mixeduse development which can demonstrate superior use of land, more efficient utilization of public facilities, and more effective conservation of natural resources shall be strongly encouraged by the city of Grand Terrace.
	Maximum Density	
		Medium Residential Density - 12 DU/AC
	Transit Policies	
		Public transit will be encouraged by city participation in local and regional transit programs and, by special consideration in large, new developments wherever feasible. Encourage the continuance of a public transportation system that will: 1) provide a viable alternative to the automobile; 2) satisfy the transportation needs of commuters, the economically disadvantaged, the aged, the young, and the handicapped; 3) promote service at a reasonable and equitable cost both to the users and the general community.
	Parking Management Strategies	
	TOD Policies	
	Urban Design Policies	
		Design of new development shall respect and preserve the view opportunities of existing development in the area.
	Growth Management	
	Regional Coordination	
		The city will work closely with the regional transit agencies to ensure the convenient and affordable bus service continues to be available to local residents. Encourage State, regional, and local governments and agencies to achieve a coordinated and balanced regional transportation system consistent with the city's social, economic, and environmental needs and goals.
	Financial Strategies	
		Commitment of public funds to provide necessary off-site improvements for development of vacant private property will consider the net revenue which the development will produce for the city over the time.

Highland
Mar-06

Mixed Use Designation	
	Mixed-Use (MU) Maximum Intensity: 18 dwelling units per 1.0 acre, or 1.0 FAR
Maximum Density	
	Residential Density up to 8 DU/AC
Transit Policies	
	Provide access to multiple modes of travel, including pedestrian, bicycle, transit and automobile. Encourage major employers to reduce vehicular trips by offering incentive concepts discussed in the General Plan Circulation Element, including but not limited to reduced transit passes and preferential parking for ridesharing. Continue to support the regional bus system to provide intracity service, intercity service to major employment centers, and connection to regional transportation transfer points. Work with Omnitrans to ensure that transit services are extended to serve residents in the eastern portion of the study area. Coordinate with Omnitrans to provide safe, clean and attractive bus shelters at bus stops and transfer stations.
Parking Management Strategies	
	Investigate the implementation of Variable Parking District Overlays along Base Line, Highland Historic District and other areas where appropriate, to encourage the enhancement of existing parking-deficient development. Assess the adequacy of existing or proposed on- and off-street parking as needed, especially in urban and commercial areas, to ensure that an adequate supply is provided. Explore strategies for the management of parking supply, which can include parking fees, metered on-street parking and staggered work schedules. Develop strategies for the control of parking demand such as improved transit service, amenities for bicyclists and rideshare vehicles. Develop strategies for shared parking opportunities in mixed-use and multiple-use development. Encourage the use of well-designed, aesthetically enhanced parking structures as an alternative to large, expansive surface parking lots in retail and employment centers. Provide convenient and consolidated parking where cars are screened from view, wherever possible. Segregate residential parking from commercial and office parking. Minimize the visual impact of surface parking by providing berms, landscape buffering and/or locating parking lots to the rear or side of buildings or below buildings. Locate buildings and building frontages close to the street and street corners with parking behind or to the side of the buildings. Where this is not possible or practical, ensure that street-facing parking is shielded through landscaping or berms. Reduce the visual impact of parking through consolidated parking arrangements, shared driveway access, alley-accessed designs, landscape buffers and recessed, covered parking structures. Plan for the provision of areas within the City to be used as park-and-ride regional bus and car pool facilities.
TOD Policies	
Urban Design Policies	
	Prevent future strip commercial development by encouraging lot consolidation within commercially designated areas and by limiting commercial designations to areas of sufficient size to accommodate larger scale, quality development. Connect the Town Center physically and visually with the Historic Village District with pedestrian connections, historically compatible architecture, signage, landscaping and other streetscape elements. Prohibit freestanding drive-through commercial structures and convenience commercial uses, except at the major intersection of Palm Avenue and Base Line. Encourage and improve pedestrian connections from residential neighborhoods to retail activity centers, employment centers, schools, parks, open space areas and community centers. Add raised, landscaped medians and bulb-outs, where appropriate, to reduce exposure to cross traffic at street crossings. Pursue unifying streetscape elements for major corridors, including coordinated streetlights, landscaping, public signage, street furniture and hardscaping. Locate commercial/retail uses near the sidewalk to provide high visibility from the street. In multi-use development, locate retail and commercial development close to street for higher visibility and residential uses behind for convenience and privacy. Provide pedestrian access and connections to nearby retail, transportation, recreation and educational centers, where practical. Incorporate small sitting areas and/or shaded courtyards close to shopping areas but buffered from parking and traffic impacts. Clearly delineate pedestrian routes from parking areas to retail uses to allow easy and safe pedestrian movement.
Growth Management	
Regional Coordination	
	Participate in a wide range of regional transportation planning and programs to improve the capacity, efficiency and safety of the shared circulation system. Participate in all regional transportation committees and regularly coordinate with other local agencies regarding their plans, programs and services that affect the quality and safety of the Highland roadway system. Coordinate street system improvements and traffic signal coordination with regional transportation efforts. Coordinate transit planning with the Southern California Association of Governments, SANBAG, Omnitrans and adjacent communities. Work with the Southern California Commuter Rail Council and the San Bernardino Association of Governments and Omnitrans to establish a transit connection with the Metrolink Commuter Rail System. a new freeway interchange at Victoria Avenue and to facilitate applicable roadway improvements.
Financial Strategies	
	Maximize sales-tax-generating uses through the strategic location of commercial areas, particularly at freeway interchanges, at major intersections, and within the Town Center and Golden Triangle (see also Town Center, Golden Triangle and Victoria Avenue Corridor Community Policy Areas). Encourage an appropriate mix of retail, office and civic uses to ensure the economic viability of the area.

Loma Linda	
Jun-06	
Mixed Use Designation	
	Special Planning Areas A-F, H, I
Maximum Density	
	Residential Densities up to 20 DU/AC
Transit Policies	
	Facilitate the synchronization of traffic signals along Redlands Boulevard, Barton Road, Anderson Street, and Mountain View Avenue. Where a series of traffic signals is provided along a route, facilitate the coordination of traffic signals to optimize traffic progression on a given route. Traffic signalization should emphasize facilitating access from neighborhood areas onto the City's primary roadway network, and should work to discourage through traffic from using local streets. Preserve options for future transit use when designing roadway and highway improvements. When applicable, such as adjacent to E Street Locally Preferred Alternative station(s), include Omnitrans in the review of new development projects, and require new development to provide transit improvements in proportion to traffic demands created by the project. Transit improvements may include direct and paved access to transit stops; provision of bus turnout areas and bus shelters; and roadway geometric designs to accommodate bus traffic. Encourage ridership on public transit through use of City information sources (e.g., City web site, and mail-outs) to provide information on transit services. Require community care facilities and large age-restricted developments (50 units or more, but excluding facilities designed for "active" adults) to provide transportation services for the convenience of residents as a condition of development.
Parking Management Strategies	
	Though pedestrian access is the focus, also provide convenient vehicular parking via nearby parking in an adjacent parking lot located to the side or rear of the building and/or on-street parking (where feasible considering traffic). Permit off-street parking standards to be met with a convenient off-site parking Pursue construction of parking structures within the downtown area to serve projected parking demand and facilitate mixed-use development without the need to meet off-street parking standards on each individual parcel.
TOD Policies	
	Support transit-oriented development in proximity to E Street Locally Preferred Alternative station(s). Such development would include a variety of retail housing, employment opportunity, healthcare, and civic/governmental uses in walking distances of stations to encourage transit ridership and address air quality and traffic congestion concerns. In addition, support integration of E Street Locally Preferred Alternative transit stations into nearby planned developments and attractively landscaped pedestrian linkages interconnecting transit supportive uses to the transit stations.
Urban Design Policies	
	Place commercial and office development so that it has a strong relationship with the street, such as by siting the buildings so that they are close to the street, or for buildings that need to be set back from the street with a large parking lot, locate pad buildings along the street to maintain an attractive street edge and visually buffer the parking lot. Design streets to accommodate slow to moderate moving local traffic (e.g., two lanes maximum each direction) or close streets to provide for pedestrian use only. Thus, through traffic on arterials would be provide on the periphery of pedestrian oriented development. Ensure that the site design of new developments provides for pedestrian access to existing and future transit routes and transit centers through specific review during the development review process. 3.1.1.1 Pedestrian-Oriented Development Guiding Policy For pedestrian oriented development (located within commercial or mixed-use land use designations as indicated in the Land Use Element) ensure that the features that make for attractive and functional pedestrian-oriented development are provided.
Growth Management	
	The Public Open Space land use category applies to lands within the Loma Linda South Hills area that is owned by the City, and intended for long-term natural open space and trails. The intent of this designation is to preclude the development of buildings, and to permit only such improvements and facilities as are consistent with the permanent protection of natural open space. Thus, while recreational trails are encouraged within this area, their design and use is to be consistent with the environmental values of the lands they traverse.
Regional Coordination	
Financial Strategies	
	Attract new, and maintain existing, commercial and office uses to better serve the retail and service needs of the community, to keep the sales tax revenues from purchases by the Loma Linda community from going elsewhere, to reduce the length of trips necessary to meet retail and service needs, and to expand employment opportunities within the community.

Montclair	
Jun-99	
Mixed Use Designation	
Maximum Density	
	Residential Medium Density up to 14 DU/AC
Transit Policies	
	CE-1.1.10. Promote the provision of public modes of transportation between strategic locations such as the Montclair Plaza Shopping Center, and other traffic generators, such as the Montclair Transcenter and potential Metrolink station on the Riverside Line.
Parking Management Strategies	
TOD Policies	
	CD-1.6.0. To encourage the development of parcels along Central Avenue and Holt and Mission Boulevards where development has previously been hindered due to parcel size and configuration, access and multiple ownership.
Urban Design Policies	
	LU-1.5.0. To ensure that commercial areas within the City are conveniently located, efficient, attractive, safe for pedestrian and vehicular circulation and concentrated into districts and centers in order to better serve a larger portion of the City's needs, while also continuing to provide regional commercial services as the dominant proportion of the regional market in recognition of the economic contribution and image identification associated with regional centers. LU-1.1.5. Promote the assemblage of commercial parcels found in strip commercial areas along Central, Holt, Moreno and Mission. LU-1.1.25. Encourage the design of these properties to create an enjoyable environment for shopping by promoting improved architectural appearance of buildings, excellent landscaping, and appropriate regulated signing, parking and traffic circulation. CE-1.1.5. Promote the beautification of streets by promoting and maintaining a tree planting, tree replacement, tree maintenance and landscaping program on all streets, with special emphasis on the entrance to the city, to screen from view service road areas, and along major/minor roadway corridors and median dividers. CD-1.1.1. Continue the establishment of an individual and distinctive identity by encouraging the highest quality design in architecture, landscape architecture, sign graphics, and in the design of street furniture and fixtures.
Growth Management	
Regional Coordination	
	LU-1.1.4. Participate in and support the regional activities of the Southern California Associated Governments, the San Bernardino Associated Governments, City/County Planning Commissioners Conference, and other such agencies.
Financial Strategies	

Ontario		
2005		
	Mixed Use Designation	
		Community Development Element Matrix Section 7.3: Land Use Goals and Implementation Policies Policy 7.3.5.4: Support and encourage development of mixed use projects, which combine residential uses commercial uses in a planned environment
	Maximum Density	
	Transit Policies	
		M3-2 Transit Facilities at New Development. We require new development to provide transit facilities, such as bus shelters and turnouts, as necessary. M3-4 Bus Rapid Transit (BRT) Corridors. We work with regional transit agencies to implement BRT service to target destinations and along corridors, as shown in the Transit Plan. M3-5 Light Rail. We support extension of the Metro Rail Gold line to Ontario, and will work to secure station locations adjacent to the Meredith site and at the proposed multimodal transit center. M3-6 Metrolink Expansion. We advocate expansion of Metrolink service to include the Downtown and and the multimodal transit center. M3-7 High Speed Rail. We encourage the development of high-speed rail systems that would enhance regional mobility in Southern California and serve the City of Ontario. M3-8 Feeder Systems. We work with regional transit agencies to secure convenient feeder service from the Metrolink station and the proposed multimodal transit center to employment centers in Ontario. M3-9 Ontario Airport Metro Center Circulator. We will explore development of a convenient mobility system, including but not limited to shuttle service, people mover, and shared car system, for the Ontario Airport Metro Center. M3-10 Multimodal Transit Center. We will explore development of a multimodal transit center near LAONT airport to serve as a transit hub for local buses, BRT, the Gold Line, high-speed rail, the proposed Ontario Airport Metro Center circulator and other future transit modes. Transit Implementation Work with transit providers to identify and implement appropriate infrastructure improvements and minimize potential impediments to enhance the effectiveness of BRT (Bus Rapid Transit) service in Ontario, including consideration of strategies such as traffic signal preemption and queue-jumper lanes. Evaluate the provision of incentives, such as but not limited to reduced parking standards and density/intensity bonuses, to those projects near transit stops that include transit-friendly uses such as child care, convenience retail, and housing. Establish a development impact fee for the Ontario Airport Center to help fund the intermodal transit center and Ontario Airport Metro Center circulator.
	Parking Management Strategies	
	TOD Policies	
		M3-3 Transit-Oriented Development. We consider the provision of development related incentives for projects that promote transit use.
	Urban Design Policies	
		LU1-3 Mobility. We promote development and urban design that reduces reliance on the automobile and capitalizes on multi-modal transportation opportunities. LU3-2 Design Incentives. We offer design incentives to help projects achieve the Vision. The incentive program is intended to realize improved value, a rich palette of amenities, locational landmarks, and to create identifiable places through the use of the following types of qualities/features: 1. Improved or intensified commercial and/or mixed use developments on the intersections of arterial roadways 2. Innovative site plans and layouts 3. Ideal mixture and placement of uses 4. Residential infill projects near transit facilities, recreational amenities, and/or service and employment centers 5 . Replacement of under-performing, mid-block strip commercial uses with new residential uses or the improvement and/or intensification of existing, mid-block residential uses. 6. Lot consolidation and development of desired projects 7. Residential or employment uses within a five minute walk to transit 8. Shared/consolidated parking facilities 9. Local-serving uses that reduce trips and improve community identity (e.g. day care centers, video rental stores, community centers, or parks) 10. Creation of community activity centers 11. Pedestrian building orientation and design 12. Public plazas The menu of incentives below describes the types of incentives that will be considered in return for the features noted above. 1. Density transfers 2. Combinations of adjoining land use designations (e.g. Low Density and Neighborhood Commercial land use designations) using the combined maximum density as base development ceiling. 3. Minor adjustments of land use boundaries 4. Reduced parking requirements 5. Increased floor area ratio (FAR) 6. Increased residential density 7. Increased maximum height 8. Reduced setbacks 9. Modifications to onsite open space (private and common) requirements CD1-4 Transportation Corridors. We will enhance our major transportation corridors within the City through landscape, hardscape, signage and lighting. CD2-4 Mixed Use, Urban Office and Transit Serving Areas. We require mixed use, urban office and transit serving areas to be designed and developed as pedestrian oriented "villages" that promote a vibrant, comfortable and functional environment. CD2-5 Streetscapes. We design new and, when necessary, retrofit existing streets to improve walkability, bicycling, and transit integration, to strengthen connectivity, and enhance community identity through improvements to the public right of way such as sidewalks, street trees, parkways, curbs, street lighting, and street furniture. CD2-6 Connectivity. We promote development of local street patterns and pedestrian networks that create and unify neighborhoods, rather than divide them, and create cohesive and continuous corridors, rather than independent "islands" through the following means: - local street patterns that provide access between subdivisions, within a neighborhood and discourage through traffic; - a local street system that is logical and understandable for the user. A grid system is preferred to avoid circuitous and confusing travel paths between internal neighborhood areas and adjacent arterials; and - neighborhoods, centers, public schools, and parks that are linked by pedestrian greenways/open space networks. These may also be used to establish clear boundaries between distinct neighborhoods and/or centers. CD3-1 Pedestrian Circulation. We require that pedestrian, vehicular and bicycle circulation on both public and private property be coordinated and designed to maximize safety, comfort and aesthetics. CD3-2 Connectivity Between Streets, Sidewalks, Walkways and Plazas. We require landscaping and paving be used to optimize visual connectivity between streets, sidewalks, walkways and plazas for pedestrians. CD3-7 Transit Stops. We require transit stops be well lit, safe, appealing to and accessible by pedestrians.
	Growth Management	
		LU1-1 Strategic Growth. We concentrate growth in strategic locations that help create place and identity, maximize available and planned infrastructure, and foster the development of transit.
	Regional Coordination	
		LU1-4 Jobs-Housing Balance. We coordinate land use, infrastructure, and transportation planning and analysis with regional, county and other local agencies to further regional and subregional goals for jobs-housing balance.
	Financial Strategies	

Rancho Cucamonga	
Mar-06	
Mixed Use Designation	
	2.5.3.6 Mixed Use (Probable FAR of 0.40 and Maximum FAR of 1.0)
Maximum Density	
	Residential Densities up to 30 DU/AC
Transit Policies	
	3.5.5 We shall pursue trip reduction and transportation systems management measures to reduce congestion on roadways and at intersections. 3.5.8 We shall continue to coordinate with Omnitrans to provide transit service (bus or shuttle) to our major centers of activity, employment, and housing. 6.4.4.3 Require the design of transit stops to be compatible with adjacent development and provide for adequate seating, signage, and shade.
Parking Management Strategies	
TOD Policies	
	2.6.1.5.7 Development projects should be designed to facilitate non-vehicular and transit system access and use. 6.4.1.5 Mixed use areas should be developed as higher intensity "urban centers" where there is sensitive integration of land uses, convenient modes of transportation, and a focused "sense of place" that emanates from the architectural and landscape design.
Urban Design Policies	
	Include an integrated circulation system of arterial access, internal circulation, parking facilities, pedestrian pathways, bicycle routes, transit stops (where applicable), and related signage. It is intended that movement within the entire opportunity area be feasible on site without being forced to use adjacent arterial highways to move to other portions of the mixed-use development. 2.6.1.2.1 Key opportunity areas should be given priority in the further development of the City by focusing City efforts on bringing about their development or conservation, as appropriate, as soon as possible. 2.6.1.3.2 Restrict strip commercial development in favor of more focused commercial or mixeduse centers. 2.6.1.3.3 Commercial and office development should have equally convenient access for pedestrians, bicycles, buses and automobiles. 2.6.1.3.9 Allow medium and high density residential uses along transit routes in mixed-use areas and in the vicinity of activity centers. 3.5.11 We shall require the implementation of sidewalks and paths to enable safe and convenient pedestrian travel within our community. 6.4.1.6 The intersection of Foothill Boulevard and Haven Avenue, extending south to 4th Street, should form the central business hub of the City with higher intensity office, commercial, and public/quasi-public uses. 6.4.4.4 Continue to pursue the placement of public art in prominent locations, particularly along major travel corridors and intersections within the City.
Growth Management	
Regional Coordination	
	2.6.1.1.2 Regionally oriented uses should be located near the regional transportation network. 2.6.1.1.3 Access to regional serving uses shall be designed to provide maximum access capability and permit maximum dispersal of traffic.
Financial Strategies	

Redlands	
1995 Amended Dec 1997	
Mixed Use Designation	
Maximum Density	
	Residential Densities up to 27 DU/AC Density Limitation: Under Measure N, a zoning ordinance, no land designated by the General Plan as urban reserve as of June 1, 1987 is to be redesignated for a higher density than one dwelling unit per 14,000 square feet of net site area, except by a four-fifths vote of the City Council with findings of "no significant adverse environmental impact." Current City policy that specifies a maximum density on slopes of 15 to 30 percent at one unit per two and one-half acres and, on slopes exceeding 40 percent, one unit per 10 acres. On slopes between 30 and 40 percent, required site area increases approximately proportionally from five acres to 10 acres per unit depending on slope and soil type.
Transit Policies	
	5.40a Ensure that employers implement TDM programs to reduce peak period trip generation. 5.40b Cooperate with public agencies and other jurisdictions to promote local and regional public transit serving Redlands. 5.40c Support the Congestion Management Program for San Bernardino County. 5.40e Favor TDM measures that limit vehicle use over those that extend the commute hour. Programs such as ridesharing and public transit reduce overall vehicle travel while flex time and staggered work hours simply shift traffic to less congested times of day. 5.40f Support local feeder bus service to and from current and future regional transit lines. 5.40g Preserve options for future transit use when designing improvements to roadways. 5.40h Work with Omnitrans to plan for local bus routes that are better able to penetrate neighborhoods to improve service for potential riders. Designate local bus routes in Specific Plan areas. 5.40i Future commuter rail services are planned within the Santa Fe rail corridor, with stops at California Street, Orange Street and Mentone Blvd. Improvements to these streets should be planned for feeder transit services, and park-and-ride provisions should be made at these locations. Another logical stop would be at University Street to serve the campus at the University of Redlands. Other potential stops could be at Judson Street and at Crafton Avenue. Residents in these areas might use short, trip commuter rail to downtown Redlands, either to work or shop. 5.40j Work with Omnitrans to plan for bus shelters and turnouts. 5.40k Incorporate bus shelters and turnouts into design and approvals of new developments as necessary.
Parking Management Strategies	
TOD Policies	
Urban Design Policies	
	4.40g Locate high and Medium-Density development near regional access routes, employment centers, shopping areas, and public services. 4.40i Encourage incorporation of residential units in Downtown mixed-use projects.
Growth Management	
	1A.40 Principle Four Agricultural uses of land are important to the culture, economy and stability of the City of Redlands and shall be preserved to the greatest extent possible consistent with the will of the people as expressed in Proposition R and Measure N, and consistent with the policies of the State of California set forth in Government Code Section 51220. 2.0e Encourage and promote orderly development and growth of urban areas while maintaining and encouraging the best possible use of agricultural land, protecting it against premature encroachment of non-agricultural development. Consider the costs of extending urban facilities and services in the review of urban development.
Regional Coordination	
Financial Strategies	

Rialto		
Mar-92		
	Mixed Use Designation	
		CD Policy 1.2.3 - In that the mixed use character of neighborhoods may be a positive influence (promoting self sufficiency), as well as a negative influence (sot zoning and incursion of incompatible land uses), the City will discourage such spot zoning and incompatible land uses within its neighborhoods. At the same time, the City will encourage a variety of compatible land uses within walking distance of residential neighborhoods. This may be accomplished by encouraging master planned, mixed use projects which incorporate the basic range of uses, facilities, and services necessary for neighborhoods to sustain themselves. The City shall consider such projects only when accompanied by a design program demonstrating that an innovative urban village concept can be created which meets the objectives of this element.
	Maximum Density	
		Residential Densities up to 21 DU/AC
	Transit Policies	
		3.2.3.4 Alternative modes of travel such as commuter rail, park and ride facilities, bus transit and bicycle trails shall continue to receive cooperation and support from the City.
		3.2.3.5 Ride sharing, flexible work scheduling and telecommuting provisions of the AQMP and CMP shall be supported by the City for its own employees as well as for the major businesses and industries within the City. Goal 5.1. Maximize the benefits of commuter rail service to Rialto. Policies: 5.1.1.1 Work with SANBAG to adopt the commuter rail line plan which includes thirteen stops, thus assuring a stop in Rialto. 5.1.1.2 Plan for a commuter rail station which includes: -Required parking of 300 spaces, -An adjoining transit center convenient for passenger transfer between commuter rail and bus lines, -Shopping and services for commuters adjacent to the station site, and -Maximum accessibility to the Downtown Area. 5.1.1.3 Apply the T – C (Transportation Corridor Zone) provisions' to both midCity railroad lines in Rialto in order to ensure that -Public improvements and other conditions of approval necessitated by development are provided. Goal 6.1.1 Improve public support and use of local Omnitrans service. Policies 6.1.1.1 Provide an Omnitrans terminal at the Commuter Terminal/ Transit Center. 6.1.1.2 Work with Omnitrans to use its Transit Center Terminal as the hub of routes within and through Rialto. 6.1.1.3 Work with Omnitrans to coordinate bus schedules with commuter rail schedules. 6.1.1,4 Continue providing clean and lighted bus passenger shelters. Goal 6.1.2 Recognize paratransit as an important adjunct to transportation services in Rialto. Policies: 6.1.2.1 Encourage major employers to use van pools and other HOYs for home to work journeys, as required by the AQMP. 6.1.2.2 Encourage employers to use vans, small buses and other HOYs to link work places with the Transit Center. 6.1.2.3 Investigate the feasibility of -intra-City van or municipal bus service for shopping, recreation and other transportation needs of residents, workers and the transit dependent.
	Parking Management Strategies	
		4.1.1.1 Develop a Parking Management Plan as a tool for assessing Citywide parking supply and demand and meeting changing parking needs as they occur throughout City. 4.1.2.1 Provide priority parking spaces for ride share and HOV (high occupancy vehicles) in transit center parking lots. 4.1.3.2 Require priority parking spaces for ride share and HOV at employment centers, when required by AQMP or CMJP. 4.1.3.3 Support additional AQMP and CMP parking standards as required. 4.1.2.1 Monitor Transit Center/Commuter Rail parking to prevent "spill-over" parking by commuters using spaces designated for Downtown business customers.
	TOD Policies	
	Urban Design Policies	
		Goal 4.1.3 Enhance Riverside Avenue to . be the signature street of the City of Rialto. Policies 4.1.3.1 Create a portal at the City's north west entrance on Riverside Avenue. 4.1.3.2 Provide planted median strips, parkway planting and turning pockets on Riverside Avenue throughout the City. (Refer to the Community Design Element, Chapter VIII, Street Enhancement Program.) 4.1.3.3 Preserve and improve the northern section of Riverside Avenue as an enhancement to some of the City's finest neighborhoods. 4.1.3.4 Prevent strip commercial development and other inappropriate land uses on northern Riverside Avenue which is inconsistent with the goals and policies of the General Plan 1.3.5 Within industrial and commercial developments, discourage rectangular building footprints along street frontages, and encourage the arrangement of structures on' the site to allow for adequate visibility of the site, to promote visual interest as well as for security measures. 1.3.6 Encourage and provide for adequate pedestrian and/or bicycle linkages in, and between, commercial areas. 3.1.7 Parking lots at the rear of a commercial development shall not be isolated from the fronts of buildings. Commercial developments shall provide either mid-building pedestrian access or fully treated rear entrances. Delivery areas shall be separated from pedestrian areas. 3.1.8 Rather than relating only the parking lots, commercial projects should also include internal corridors or passages which are not jeopardized by automobile noise and congestion. These should be designed with the type of visual and social elements which can draw the pedestrian from building to building, patio to courtyard. 3.1.11 Bus shelters shall be incorporated in all new commercial and industrial projects, and in all residential, institutional or other developments fronting major highways as defined in Chapter V, Circulation. Bus shelters may also be required in rehabilitation projects affecting existing commercial and industrial projects. 3.1.12 The City will incorporate the construction of bus shelters for existing projects into its capital improvement program.
	Growth Management	
	Regional Coordination	
		3.2.1.4 Coordinate east-west arterial improvements with the cities of Colton, San Bernardino and Fontana.
	Financial Strategies	
		4.1.2.2 At such time as growth and development in the Downtown area make the current inventory of Downtown streetside parking space insufficient to meet the needs of Downtown businesses, additional parking shall be provided in municipal lots adjacent to Downtown businesses. Land acquisition, construction and maintenance of these parking facilities are to be funded by a special assessment district.

San Bernardino	
Nov-05	
Mixed Use Designation	
	Regional Commercial: Commercial Regional-2 (CR-2) Downtown - "Non-Residential Intensity - 3.0 floor area ratio (4.0 floor area ratio if a vertical mixed use project)· Residential Density - 54 dwelling units per acre."
Maximum Density	
	Residential Densities up to 36 DU/AC
Transit Policies	
	Goal 6.6 Promote a network of multi-modal transportation facilities that are safe, efficient, and connected to various points of the City and the region. Policies: 6.6.2 Create a partnership with Omnitrans to identify public transportation infrastructure needs that improve mobility. 6.6.3 In cooperation with Omnitrans, require new development to provide transit facilities, such as bus shelters and turnouts, as necessary and warranted by the scale of the development. (LU-1) 6.6.4 Ensure accessibility to public transportation for seniors and persons with disabilities. 6.6.5 In cooperation with Omnitrans, explore methods to improve the use, speed, and efficiency for transit services. These methods might include dedicated or priority lanes/signals, reduced parking standards for selected core areas, and incorporating Intelligent Transportation System architecture. 6.6.6 Support and encourage the provision of a range of paratransit opportunities to complement bus and rail service for specialized transit needs. 6.6.7 Encourage measures that will reduce the number of vehicle-miles traveled during peak periods, including the following examples of these types of measures: -Incentives for car-pooling and vanpooling. -Preferential parking for car-pools and vanpools. -An adequate, safe, and interconnected system of pedestrian and bicycle paths. -Conveniently located bus stops with shelters that are connected to pedestrian/bicycle paths. (A-1) 6.6.8 Promote the use of car-pools and vanpools by providing safe, convenient park-and-ride facilities. 6.6.9 Work with Omnitrans to create transit corridors, such as the one currently being explored on E Street linking CSUSB to Hospitality Lane, to increase transit ridership, reduce traffic congestion, and improve air quality. 6.6.10 Consider the provision of incentives, such as reduced parking standards and density/intensity bonuses, to those projects near transit stops that include transit-friendly uses such as child care, convenience retail, and housing.
Parking Management Strategies	
	Goal 6.9 Achieve a balance between parking supply and demand. Policies: 6.9.1 Ensure that developments provide an adequate supply of parking to meet its needs either on-site or within close proximity. (LU-1) 6.9.2 Study the parking standards in the Development Code to determine if adequate flexibility is available to accommodate desirable situations, such as shared parking, Corridor Improvement actions, or transit oriented developments. (A-1) 6.9.3 Continue to expand the supply of public parking in offstreet parking facilities in downtown San Bernardino. 6.9.4 Continue to provide an in-lieu parking fee option for developments in the Downtown area to satisfy all or part of their parking requirement through the payment of an in-lieu fee which will be utilized to provide parking in consolidated public parking facilities. 6.9.5 Require that new developments submit a parking demand analysis to the City Engineer for review and approval whenever a proposal is made to provide less than the full code requirement of parking. (LU-1) 6.9.6 Develop parking and traffic control plans for those neighborhoods adversely impacted by spillover parking and traffic. (C-3)
TOD Policies	
	Encourage mixed use development and pedestrian friendly uses/development adjacent to transit stops. 2.3.2 Promote development that is compact, pedestrian-friendly, and served by a variety of transportation options along major corridors and in key activity areas. (LU-1) 2.4.6 Work with Omnitrans to explore initiatives that promote redevelopment near transit stops in order to encourage transit ridership, reduce vehicular trips, improve air quality, and improve traffic congestion: -Concentrate mixed use development, retail, employment, entertainment, educational, and civic/government uses within walking distance of transit stops. -Explore the use of incentives that can be awarded to projects that provide pedestrian amenities (wide sidewalks, public plazas, seating areas, etc…) and/or include desirable uses located within walking distance (1/2 mile) of transit stops. Incentives may include density bonuses, increases in non-residential floor area, reductions in parking requirements, and modified development standards.
Urban Design Policies	
	Promote downtown revitalization by seeking and facilitating mixed-use projects (e.g. combinations of residential, commercial, and office uses). Parking should be located to the rear, below, or above the ground floor of the street-facing commercial/office structure. 2.3.1 Commercial centers, open spaces, educational facilities, and recreational facilities should be linked to residential neighborhoods. (LU-1) 2.3.7 Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values. (CD-1) 2.4.2 Continue to provide special incentives and improvement programs to revitalize deteriorated housing stock, residential neighborhoods, major business corridors, and employment centers. (LU-3 and LU-4) 2.5.6 Require that new developments be designed to complement and not devalue the physical characteristics of the surrounding environment, including consideration of: -Linkages to pedestrian, bicycle, and equestrian paths; -The use of consistent and well designed street signage, building signage, and entry monumentation -The location of parking at the rear, above, or below the ground floor of non-residential buildings to enhance pedestrian connectivity. (LU-1) 5.3.3 A well-integrated network of bike and pedestrian paths should connect residential areas to schools, parks, and shopping centers. (LU-1 and CD-3 5.5.5 Provide continuous sidewalks and links to nearby community facilities and retail centers. (LU-1) 5.6.3 Reduce the visual impact of parking areas by utilizing interior courtyard garages, parking structures, subterranean lots, or tuck-under, alley-loaded designs. (LU-1) 5.6.5 Provide convenient pedestrian access from multi-family development to nearby commercial centers, schools, and transit stops. (LU-1) 5.7.2 Orient buildings toward major thoroughfares, sidewalks, and public spaces so that parking is convenient but not visually dominating. (LU-1) 5.7.5 Parking areas shall provide, where practical, pedestrian pathways for safe access to shopping and activity areas that are defined by landscaped planters and incorporated into the parking lot design. (LU-1 5.7.7 Minimize the visual impact of surface parking lots by locating them behind buildings, away from the street or through perimeter and interior landscaping, berming, and small-scale fencing. (LU-1) Purpose: The Corridor Improvement Program is an optional package of policy, regulatory, and incentive programs that, if applied, are intended to stimulate private investment and result in desired development within the Corridor Strategic Areas. This is accomplished by providing optional incentives, in the form of density bonuses and varied development standards, to developments that qualify. While the underlying land use designations still apply, the property owner may request, and the City may choose to apply, aspects of this program to stimulate desirable development. A) Priority Locational Projects are those that: 1) Develop or improve commercial and/or mixed uses on the intersections of arterials, and/or 2) replace strip commercial use with residential uses or improve existing residential uses between the intersections of arterials. -In Priority Locational Projects: mixed-use projects are permitted with a floor area ratio of 2.0 for commercial and office uses and residential density of 24 units per acre. Commercial only projects are permitted at a maximum floor area ratio of 1.5. A maximum height of 3 stories is permitted for projects that combine residential and commercial uses and 2 stories for commercial only projects. Parking areas are required to be located in the rear of the lot with the buildings oriented to the sidewalk. B) Lot Consolidation. Projects that combine parcels are eligible to receive a 2.5% density bonus and a 10% floor area ratio bonus for each lot combined. C) Encourage the development of desired projects or provide public amenities through the use of incentives. The following incentives are not cumulative and the City can choose to award the greatest level of incentives to projects that incorporate numerous desirable features. -Proximity to transit. Projects with a residential component that are located within 500 feet of a designated transit stop are eligible to receive up to a 15% density bonus. Mixeduse projects would also receive a 10% increase in floor
Growth Management	
Regional Coordination	
	6.4.3 Continue to participate in forums involving the various governmental agencies such as Caltrans, SANBAG, SCAG, and the County that are intended to evaluate and propose solutions to regional transportation problems. 6.6.1 Support the efforts of regional, state, and federal agencies to provide additional local and express bus service in the City.
Financial Strategies	

Upland	
Jun-82	
Updates Compiled: Jul 1992	
Circulation & Land Use 1996	
Mixed Use Designation	
	Mixed Use Commercial/Industrial - Redesign industrial/commercial sites, or allow for adaptive reuse of industrial areas through redesignation of land use to regional commercial or industriAUcommercial mixed use designation.
Maximum Density	
	Medium Residential Densities up to 20 DU/AC
Transit Policies	
	Public transportation facilities shall be promoted that: (1) provide a viable alternative to the automobile; (2) satisfy the transportation needs of the commuters, the economically disadvantaged, the aged, the young, and the disabled; and (3) promote service at a reasonable and equitable cost to both the users and the general community. Regional commuter rail service shall be encouraged. Increased inter-community and regional bus service shall be encouraged.
Parking Management Strategies	
	Parking concepts that relate to joint or shared parking use to maximize utilization of existing and proposed parking facilities shall be considered. Whenever a development proposed to provide less parking than that required by the City Zoning Code, the applicant for that development shall submit a parking demand analysis to the City Public Works Director for review and approval.
TOD Policies	
Urban Design Policies	
	Provide for the development of Foothill Boulevard frontages for commercial as well as residential uses subject to development standards intended to control vehicular access and improve visual quality of the thoroughfare. Consider the implementation of a variety of Redevelopment Agency incentives within the Foothill Corridor project area. Revise the Zoning Ordinance 8. Establishment of standards to enhance the pedestrian character of streets in the commercial industrial districts including the types of use, architectural design, and siting of structures at the ground floor elevation. Lot Consolidation Program The City, in cooperation with the Redevelopment Agency and local property owners may develop a program for the consolidation of small lots into larger parcels of greater economic viability in the Town Center, in the 7th and 9th Streets study areas, and Foothill Boulevard. This should occur with specific short term development programs for these areas and developer participation. Urban Design Improvements The City shall provide for formulation of Urban Design Guidelines, define a funding program, and implement public space improvements for key activity areas and entry points to the City, as defined by the land use strategy. This will include street trees and landscape, street furniture, lighting, signage, sidewalk and special paving, other pedestrian amenities, and physical integration of individual developments for pedestrian and vehicular customer convenience. Locations for which plans should be prepared and improvements implemented include: -City entries. -Town Center. -Major commercial/industrial corridors. -Foothill Boulevard. -Euclid Avenue. Pedestrian connections shall be encouraged between commercial uses and adjacent residential development through the City site planning review process. Encourage combining vehicular and pedestrian traffic patterns between separate adjoining developments to reduce hard surface aspect along major corridors. All new development shall be encouraged to provide landscaped parkways, appropriate pedestrian amenities and other streetscape improvements that improve the aesthetics of the roadway to both vehicular and pedestrian traffic.
Growth Management	
Regional Coordination	
Financial Strategies	
	Rehabilitation/Renovation Incentives The City shall continue to expand programs of low interest loans and grants for the renovation, rehabilitation, and/or adaptive reuse of existing residential, commercial, and industrial structures. Additionally, the City shall establish educational programs to train property owners and tenants in renovation and rehabilitation construction techniques and provide technical assistance to low income individuals. The latter should include building surveys and improvement specifications by structural and mechanical engineers and architects and construction assistance by contractors. The City should solicit programs of voluntary participation by local architects, engineers, contractors, and construction workers.

Yucaipa	
Jul-04	
Mixed Use Designation	
	Planned Development (PD). (Future Land Use)
Maximum Density	
	Medium Residential Densities up to 8 DU/AC
Transit Policies	
	Identify long-range transportation corridors in conjunction with the plans of regional transportation agencies; develop a program to protect the right-of-way for long range transit corridors. Develop and implement a TDM ordinance Coordinate with Omnitrans for the provision of appropriate public transit routes and issues for the elderly and other city residents. Develop incentive programs for the use of alternative transportation modes such as city sponsored vanpools and other measures such as flexible working hours and four-day work weeks. Design land use patterns in new developments that minimize the number of automobile trips by providing neighborhood shopping facilities and pedestrian and bicycle paths. Because public transit is a vital element in meeting transportation demands in urban areas, the city shall implement the following actions: -Assist Omnitrans and other transit agencies in coordinating the location and scheduling of public transit services and facilities. -Urge the timely extension of public transit between residential areas and industrial/urban employment centers. -Support the establishment of transportation services and public transit between Ontario airport, orange county airport and Los Angeles International airport.
Parking Management Strategies	
	Designate existing park and ride facilities on the GP circulation maps, work with Caltrans to identify appropriate future park-and-ride facilities, and develop a program to acquire and develop sites for such facilities in areas where there is an identified need.
TOD Policies	
Urban Design Policies	
	Adopt regulations encouraging innovative residential development. Continue to use the planning development process to permit flexible design and siting standards such as setbacks, yards, and building relationships. Promote clustering as a means of achieving more efficient housing construction and providing larger areas of common open space. Establish a system to award density bonuses in return for special design, infrastructure improvements, extra amenities, useable open space or other developer efforts. Encourage the design and implementation of land uses, development standards, and capital improvement programs which maximize the use of public transit.
Growth Management	
	Utilize the provisions of the Williamson act to further the preservation of commercially viable agricultural open space. Require site development plans to provide adequate sidewalk and safe pedestrian trails.
Regional Coordination	
Financial Strategies	

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