CHAPTER 4 - A TRANSIT VISION: PUTTING THE PASSENGER FIRST

Sacramento Regional Transit Master Plan

August 10, 2009

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4 A Transit Vision: Putting the Passenger First

Introduction

4.1 This section of the TransitAction Plan presents the Vision for the future of transit service in Sacramento. It includes a Vision Statement, a supporting set of Objectives, and a Service Philosophy designed to support the design of transit services, networks and routes and ultimately the delivery of the TransitAction Plan.

The Components of a Transit Trip: Removing the Barriers

4.2 The development of the TransitAction Plan included a critical review of all aspects of transit infrastructure and service delivery. If Regional Transit (RT) is to respond to the emerging opportunities and challenges described in Chapter 2, then a more comprehensive, integrated approach to planning and delivery will be essential. The approach developed addressed transit needs at a very basic "single trip" level. In doing so all the key stages in a typical transit trip are identified. The process is as follows:

- I need to make a journey. Is transit an option? How do I find out?
- Route planning - is there easy information on schedules, route locations, stops, tickets?
- Access to transit - is it an easy and convenient walk?
- Waiting at the transit stop- do I feel safe? Am I going the right way? How long is the wait?
- The transit journey - do I need the exact fare? Is there change given? Do I get a seat? Is the ride pleasant or do I feel threatened? How do I get help if I need it? Where do I get off?
- Do I need to transfer? If so, where and how?
- My journey's end - how do I get from the transit stop to my destination? Are there signs/wayfinding?
- ...And how do I get home again?
- So many questions. Maybe I'll just drive.

4.3 By addressing each of these barriers to taking transit, the TransitAction Plan will help RT develop a transit system that is accessible, inviting and easy to use that will attract and keep new riders. The key components to be addressed include:

- Information and trip planning that is easy to use and readily accessible;
- Routes and frequencies that provide the right level of service;
- Local infrastructure- sidewalks, lighting, wayfinding and signing, safety and security to make it easy to access the transit network;
- Stations and stops - design, facilities, information, lighting, signing, safety and security, public art, landscaping to make the waiting environment as inviting and comfortable as possible;
- Fares and ticketing systems that are simple to use for regular and first-time users;
- Transit vehicles that are easy to access, offer adequate seating, including standing and storage space, provide information (visual, audible), are comfortable and address safety and security concerns;

- Transit vehicles that are fast, frequent and reliable, regardless of mode. The whole system should, as far as possible, be designed with these attributes;
- Transfer centers- design, layout, convenience of transfer, safety and security, signing, landscaping, public art to make transfers between routes and modes easy, safe and convenient; and
- Final Destination- onward way-finding and information for return journeys.

TransitAction Plan: The Vision, Objectives, and the Service Philosophy

Introduction

4.4 As part of the development of the TransitAction Plan, a workshop was held with key RT staff and managers to help frame the Transit Vision.

4.5 The goals of the workshop were to:

- Review feedback received from the early phases of public and stakeholder outreach;
- Define the existing RT Service Philosophy;
- Develop a Vision and related set of Objectives for the TransitAction Plan; and
- Develop a new Transit Service Philosophy.

Review of Feedback from Public and Stakeholder Outreach

4.6 The development of the TransitAction Plan was done through a highly consultative process with input provided by the public, stakeholders and through a series of advisory committees. Full details of the public outreach process are provided in Chapter 6.

4.7 As part of a first phase of public outreach from March to July 2008, the public, through a paper-based and online questionnaire, were asked to identify their most and least important characteristics of a good transit system. The key themes from this exercise were:

- Improve service frequency, type and coverage:
  - Improve quality: reliability, frequency, span of service, coverage, speed, comfort, shelter and security;
  - Improve appearance: safety, cleanliness, customer service;
  - Improve pedestrian and bike access to stop/stations and on-board accommodation;
  - Increase access to information: let them know what's going on and make it easy to find information about services; and
  - Incorporate environmental sensitivity: land use (Smart Growth); energy use.
- Financial considerations:
  - Willing to pay for good service (as defined above);
  - Before expanding service, make existing service higher quality (meet the needs above); and
  - People want service to reach them in far-reaching areas...but others don't want to pay for service for those who choose to live far away.

Defining the Existing RT Service Philosophy

4.8 In advance of developing a service philosophy for what RT would like to be in the future, the current RT service philosophy was defined as:

- Designed for peak period demand;
- Provides coverage over as wide a service area as possible - sometimes at the expense of providing higher frequencies on more 'productive' routes; and
- Maximizes light rail investment through feeder bus service.

The TransitAction Plan Vision and Objectives

4.9 Using the feedback received through the outreach process, a draft Vision Statement was developed to provide RT with the 30-year, long term focus. The key principles of the Vision are a focus on 'Putting the Passenger First' and a focus on using transit to support and integrate with the Blueprint's Smart Growth principles.

4.10 A set of supporting Objectives were then developed that were directly linked to the Vision, to enable RT to help justify, prioritize and trade-off projects and investments both through the development of the TransitAction Plan but also well into the future.

4.11 The TransitAction Plan Vision and Objectives are provided in Table 4.1 on the following page.

The TransitAction Plan Service Philosophy

4.12 With a vision and a set of objectives in place, RT's service philosophy for delivering transit services to the region was re-defined to provide a:

"Core high speed, high frequency, high capacity transit network serving the key demand corridors and destinations supported by a network of community and neighborhood shuttle and circulator services."

Integrated Transit Planning: Transit, Land Use, and Demand Management

4.13 The Blueprint process undertaken by the Sacramento Area Council of Governments (SACOG) identified a need to move away from continued suburban development towards a pattern of intensification and Smart Growth. SACOG, through their Metropolitan Transportation Plan (MTP) 2035, recognized that this new growth alternative could not work on its own and that there was a need for a greater investment in transit service to support the mobility needs of the region.

4.14 RT through the TransitAction Plan is developing a Vision for transit service in Sacramento that will fully support the Blueprint land use patterns of growth. However, RT is not the land use regulator and it must therefore rely on local jurisdictions and the development market to provide the intensified, more densely populated transit supportive communities.

4.15 The TransitAction Plan will only be delivered through an integrated approach to land use planning alongside transit investment combined with transportation demand management (TDM) measures that will make transit a real transportation choice in Sacramento.

TABLE 4.1 TRANSITACTION PLAN VISION AND OBJECTIVES

TransitAction Plan Vision Statement	**"Regional Transit will work in partnership to deliver a TransitAction Plan that supports the Blueprint's Smart Growth land use principles by providing a modern, efficient and sustainable transit system that attracts and serves riders by offering a real transportation choice catered to their lifestyles and supporting the region's future economic prosperity."**					
TransitAction Plan Objectives	**Provide a safe and secure transit system:**	**Provide an efficient, cost-effective transit system**	**Provide an integrated transit system that is linked to transit-oriented, land use policies**	**Provide a fully accessible transit system that maximizes passenger convenience**	**Reduce the impact on the environment**	**Support the economy by improving access to opportunity areas by transit**

TransitAction Plan Sub-Objectives	▪ All design and operational standards to meet established safety principles
	▪ Security presence/CCTV on entire RT network
	▪ Established legal powers/framework for reducing nuisance behavior
	▪ Defined system-wide cleaning protocols/ standards
	▪ Crime Prevention Through Environmental Design (CPTED) standards applied to fully address 'whole trip' safety issues/ concerns:
	  ▪ Access to stops (including signing, lighting, landscaping) and onward to final On-board safety requirements
	  ▪ Stops designs and waiting environment including transfer points/ centers destinations
		Efficient:
		▪ Fast journey times (competitive with car)
		▪ Reliable services (consistent with performance standards)
		▪ Punctual services (consistent with performance standards)
		Cost-effective:
		▪ Maximize ridership through market segmentation and targeted service provision
		▪ Improve the fare-box recovery of transit services
		▪ Fare structure and collection that is simple to administer and easy for passengers to use
		▪ Reduce the per rider cost of transit provision
		▪ Provide value-for-money
			▪ Minimize the need to travel
			▪ Walkable, livable communities with development and activity focused on transit hubs, centers and interchanges
			▪ Transit provision linked to higher density, mixed-use Smart Growth development and land use
				Accessible:
				▪ Complete streets to provide safe and easy access to transit
				▪ Low-level boarding throughout the network
				▪ Improve access to the transit system for the disabled and elderly
				▪ Improve the transit system serving disadvantaged areas
				▪ Improve bicycle access and storage facilities
				Passenger Convenience:
				▪ Information systems
				▪ Simple, easy-to-use fares & ticketing
				▪ High frequency services
				▪ 24-hour services
				▪ Direct services to key destinations
				▪ Easy interchange between lines and modes
				▪ Park & Ride with complementary services
					▪ Increase mode share for transit as well as walking and bicycling within communities
					▪ Transit service to support Smart Growth
					▪ RT's network to be an exemplar green system
					▪ Policies on use of recycled materials in construction
					▪ Recycling policies for operational practices
					▪ Use of proven 'green' energy supplies/ suppliers
					▪ Reduce local and global air pollution and greenhouse gas emissions
						▪ Transit investment and services linked to (re)development and intensification of land uses
						▪ Transit service as alternative to car use
						▪ Transit to support wider business community efficiencies, projects and goals
						▪ Transit network that provides easy access to retail, commercial, business, government, cultural, educational and leisure facilities
						▪ Transit services to support the implementation of regional General Plans and Blueprint Smart Growth land use principles

CHAPTER 5 - TRANSITACTION PLAN SCENARIOS

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5 TransitAction Plan Scenarios

Introduction

5.1 As an integral part of the development of the TransitAction Plan, three future year transit scenarios were developed. These scenarios served two very important purposes:

- They provided the core content of the first phase of public outreach and were used to solicit public feedback and comment on what the future transit network for Sacramento should look like;
- They provided the detail for the technical team to enable them to prepare ridership forecasts and cost estimates of each scenario.

5.2 This Chapter presents a summary of the three scenarios, followed by an overview of the ridership forecasting work completed using Sacramento Area Council of Government's (SACOG) SACMET model and an explanation of the evaluation framework that was used to assess and compare the three scenarios against each other.

Summary of the Scenarios

5.3 Three scenarios were developed to provide the public with concepts of what a future transit network for Sacramento could look like in 2035. These included:

- Scenario A - Base Case: assumes the Blueprint Smart Growth measures are not implemented and transit provision is very much a status quo offer with overall service levels constrained by existing funding sources;
- Scenario B - Blueprint and Metropolitan Transportation Plan (MTP): Assumes that the Blueprint land use is delivered and that the transit network is as proposed in SACOG's MTP 2035; and
- Scenario C - An Integrated Transit Solution: Assumes that the Blueprint land use is delivered, and extends the transit offer beyond the MTP2035 providing a fully integrated package linking the Blueprint with a comprehensive set of transit, transportation demand management (TDM) and transit-oriented development (TOD) policies and projects.

5.4 The following sections provide further detail and maps explaining what projects and assumptions were included in each scenario.

Scenario A: Base Case

5.5 Scenario A was defined as the Base Case and assumed that the Blueprint Smart Growth measures were not implemented (i.e. land use continues to evolve as it has done over the past 20-50 years) and that transit provision is very much a status quo offer.

5.6 Scenario A included the following characteristics and assumptions:

- Only included existing, confirmed capital projects;
- Service levels would be on par with 2008 but with the capacity of bus/light rail network expanded to provide sufficient supply for a growing population;
- Assumed a regional Smartcard system would be developed and implemented;
- Regional Transit's (RT) Financial Forecasting Model was used to project services, revenues and costs; and
- Assumed land use patterns would be a continuation of current development patterns (i.e. Blueprint not implemented).

5.7 Table 5.1 outlines the specific characteristics of Scenario A and Figure 5.1 illustrates the changes in the context of the greater Sacramento region. A full table comparing all three scenarios, including total estimated costs, is presented at the end of the three scenario descriptions in Table 5.7.

TABLE 5.1 SCENARIO A CHARACTERISTICS

Mode/Service Type	2035 Changes
Regional Rail	No changes over current service
Light Rail	-
Gold Line	No changes
Blue Line	Southline Phase 2 and Northeast Corridor
DNA Line	Phase 1 to Richards Blvd
Streetcar	No streetcar
Bus	Changes to accommodate population growth
Ticketing & Information	Smartcards implemented
Passenger Safety	No changes
Stops, Stations and Pedestrian Improvements	No significant improvements
Transit Vehicles, Maintenance Facilities & Other Capital Costs	Regular vehicle replacement and other standard costs

FIGURE 5.1 SCENARIO A MAP

Scenario B: Blueprint and the Metropolitan Transportation Plan

5.8 Scenario B matches the network and assumptions made by SACOG in the development of the adopted MTP2035. The MTP2035 is a comprehensive plan for the region's transportation system which invests nearly $42 billion regionally to proactively link land use, air quality and transportation needs. Table 5.2 illustrates the extent of the program.

5.9 Within the RT service area, the MTP2035 and therefore Scenario B includes:

- Increases in frequencies to many/most existing routes;
- Basic improvements to elements such as ticketing and information, passenger safety, pedestrian, and cycling environment;
- Some infrastructure improvements related to vehicle maintenance and other RT facilities; and
- More than 80 new bus routes.

5.10 Table 5.3 outlines the specific characteristics of Scenario B while Figure 5.2 illustrates the changes in the context of the greater Sacramento region. Table 5.7 compares all three scenarios.

TABLE 5.2 MTP2035 INVESTMENT

Project Area	Investment
Transit	$14.3 billion
Road Maintenance	$12.4 billion
Road Capital Projects	$11.3 billion
Programs, Planning & Transportation Enhancements	$2.3 billion
Bicycle & Pedestrian Projects	$1.4 billion
Total Investment	**$41.7 billion**

TABLE 5.3 SCENARIO B CHARACTERISTICS

Mode/Service Type	2035 Changes
Regional Rail	Upgrades to allow 30-min service
Light Rail	-
Gold Line	Double-track sections for 15-min service to Folsom
Blue Line	Southline Phase 2 and Northeast Corridor
DNA Line	Single-track extension to airport
Streetcar	Starter streetcar lines in West Sacramento and Rancho Cordova
Bus	150% increase in service levels/ hours including new enhanced bus and local bus routes
Ticketing & Information	Real-time information at stops
Passenger Safety	Additional cameras at 50 stations
Stops, stations and pedestrian improvements	Some targeted improvements
Transit Vehicles, Maintenance Facilities & Other Capital Costs	Including 2nd LRT & Bus Depots, Headquarters and Inter-modal Terminal

FIGURE 5.2 SCENARIO B MAP

Scenario C: An Integrated Transit Solution

The Need for a Comprehensive Network

5.11 In order to meet the Vision and Objectives set for the TransitAction Plan, a fully integrated network option was needed that went beyond a 'transit-only' solution and provided a link to land use, demand management and included a full program of access improvements, ticketing, information and wayfinding as well as new stops and stations.

5.12 In order to develop the transit network for the Integrated Transit option, a needs and opportunities assessment was undertaken.

Major Trip Generators

5.13 In order to provide a cost-effective transit service, there must be a certain number of key generators or anchors to the system that will draw large volumes of riders. Transit can make significant gains in ridership by linking high frequency routes to these destinations because of the sheer volume of people seeking travel to and from these sites. When concentrations of major trip generators are located near one another (i.e. downtown), the case for transit is strengthened even more so.

5.14 These high volume trip generators often fall under the following categories:

- Employment sites;
- Colleges and universities;
- Shopping malls; and
- Hospitals

5.15 Existing data has been collected with respect to each of the above categories to identify how the future transit network could serve these sites. The largest sites under each category are illustrated in Figure 5.3.

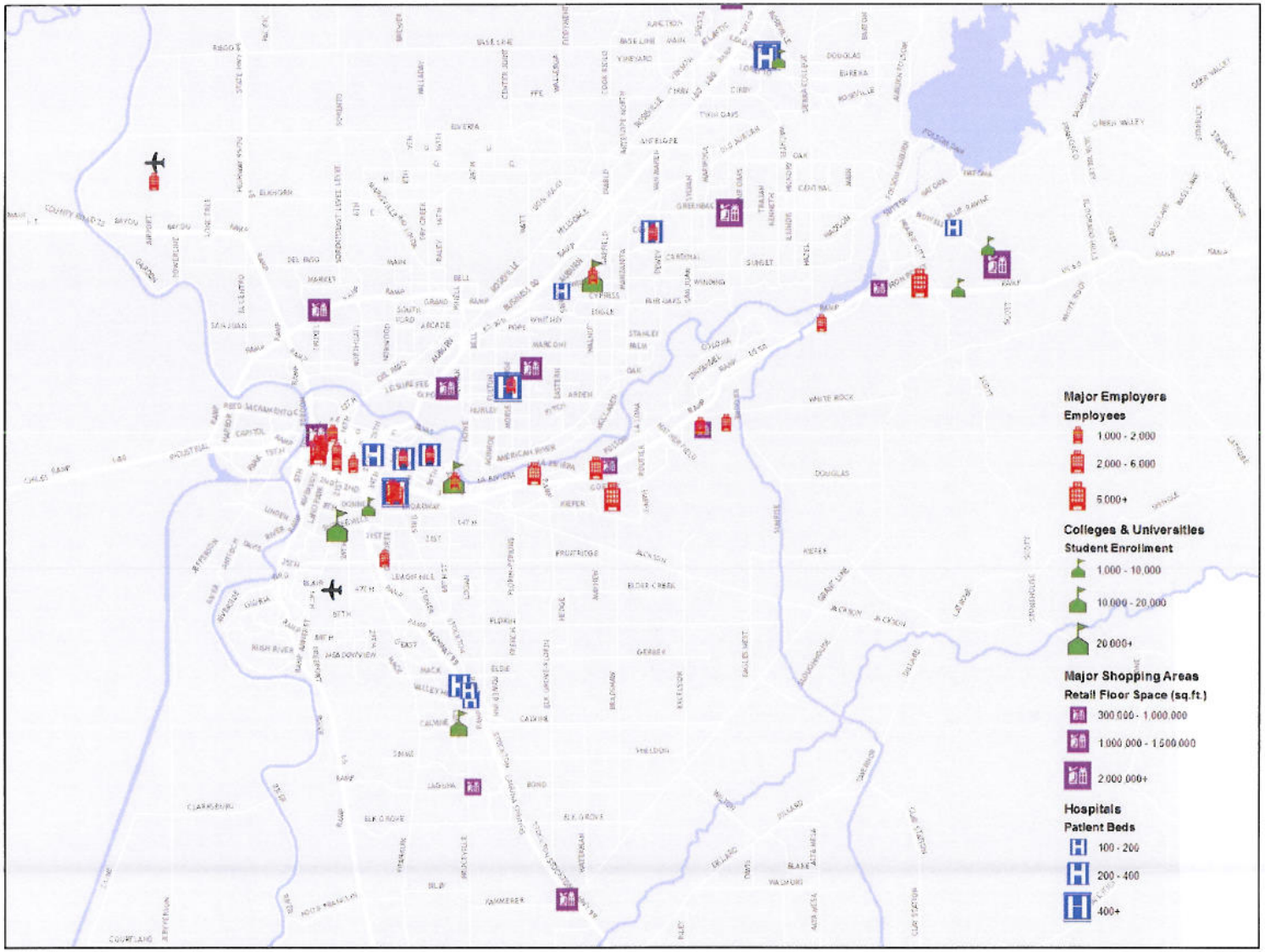
Employment Sites

5.16 Employment is a key driver for transit use and locations with extremely large employment bases are key opportunities for attracting transit ridership. Not surprisingly, Sacramento's downtown core contains a significant number of the largest employers, many of which are government organizations. Outside the downtown area, the Folsom Boulevard corridor has a high concentration of large employers while Arden and Carmichael also host some large organizations.

Colleges and Universities

5.17 Higher education institutions typically attract significant transit ridership because students are less likely to own a car and have much smaller salaries on average. The largest higher education facilities in Sacramento are already well served by transit and the extension of the Blue Line south to Cosumnes College will further improve access. Higher education is becoming increasingly more available and as a result colleges in places such as Folsom and Roseville have rapidly rising student enrollment.

FIGURE 5.3 MAJOR TRIP GENERATORS IN THE SACRAMENTO REGION



Shopping Malls

5.18 Large retail concentrations attract huge numbers of cars as people use their leisure time shopping for goods and services. Shopping malls are not only significant in attracting leisure trips; they are also employment generators and attract commuter trips as well. The largest shopping areas in Sacramento outside of downtown are Sunrise Marketplace in Citrus Heights, Arden Fair Mall in Arden-Arcade, Natomas Marketplace in North Naotmas, Broadstone Neighborhood in Folsom and the Roseville pairing of the Galleria, the Fountains and Creekside Town Center. Interestingly, a similar spatial trend to that of major employers forms as the Downtown-Folsom and Downtown-Arden-Carmichael-Citrus Heights corridors contain the majority of the large shopping centers.

Hospitals

5.19 Hospitals attract a significant number of people who are visiting family or friends receiving medical care. Hospitals are particularly in need of accessible transit facilities in order to reduce traffic in the vicinity of the hospital site to reduce ambulance response times. East Sacramento and Midtown have a concentration of the some of the largest hospitals including UC Davis Medical Center, Sutter Memorial, Mercy General, and Sutter General while Citrus Heights, Roseville and Folsom also have a few large facilities. Another significant group of hospitals is located south of Mack Road along Bruceville Road.

Future Population and Employment Density

5.20 In the future, the majority of population and employment growth is projected to occur outside the downtown core. As such, more employment opportunities will require more travel within suburban areas, between suburban areas and from downtown out to suburban areas. Increased high frequency bus services may be best suited to provide inter-suburban connections while streetcar services could provide high quality, high frequency intra-community service. At the same time, extended light rail services on existing corridors could provide additional capacity at higher frequencies and extensions to light rail service areas would enable better radial services to key centers both into and out of the downtown core.

5.21 Though much of the future employment and population growth focuses on regions outside of the downtown core, the core will still be the commercial heart of the city and the employment stronghold. Combined with the downtown core's existing high population density, it will be important to provide transit links into and out of the core but also links around and within downtown. A streetcar service could provide a local downtown loop service enabling residents and employees to get around on transit quickly without the need to further congest downtown streets.

5.22 It is important to connect employment, residential, and leisure destinations so as to attract a varied service offer able to sustain all day transit provision. Corridors with high volume traffic such as large employment centers, shopping malls and higher education facilities should be provided with high quality, high frequency service to offer potential users a viable alternative to driving.

5.23 Figures 5.4 and 5.5 illustrate the 2035 population and employment density forecasts, which demonstrate where transit provision will be needed in the future.

FIGURE 5.4 2035 POPULATION DENSITY FORECAST

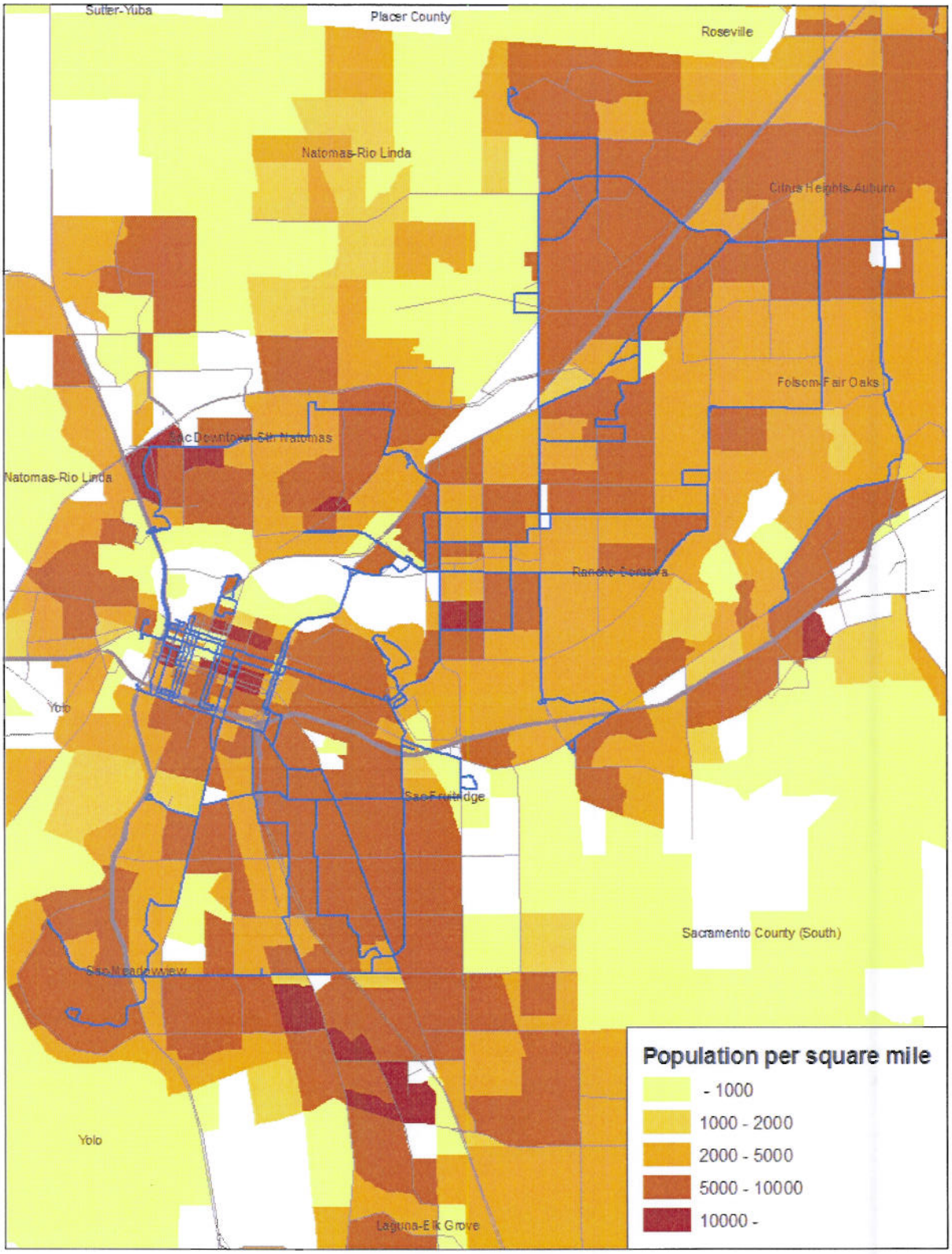
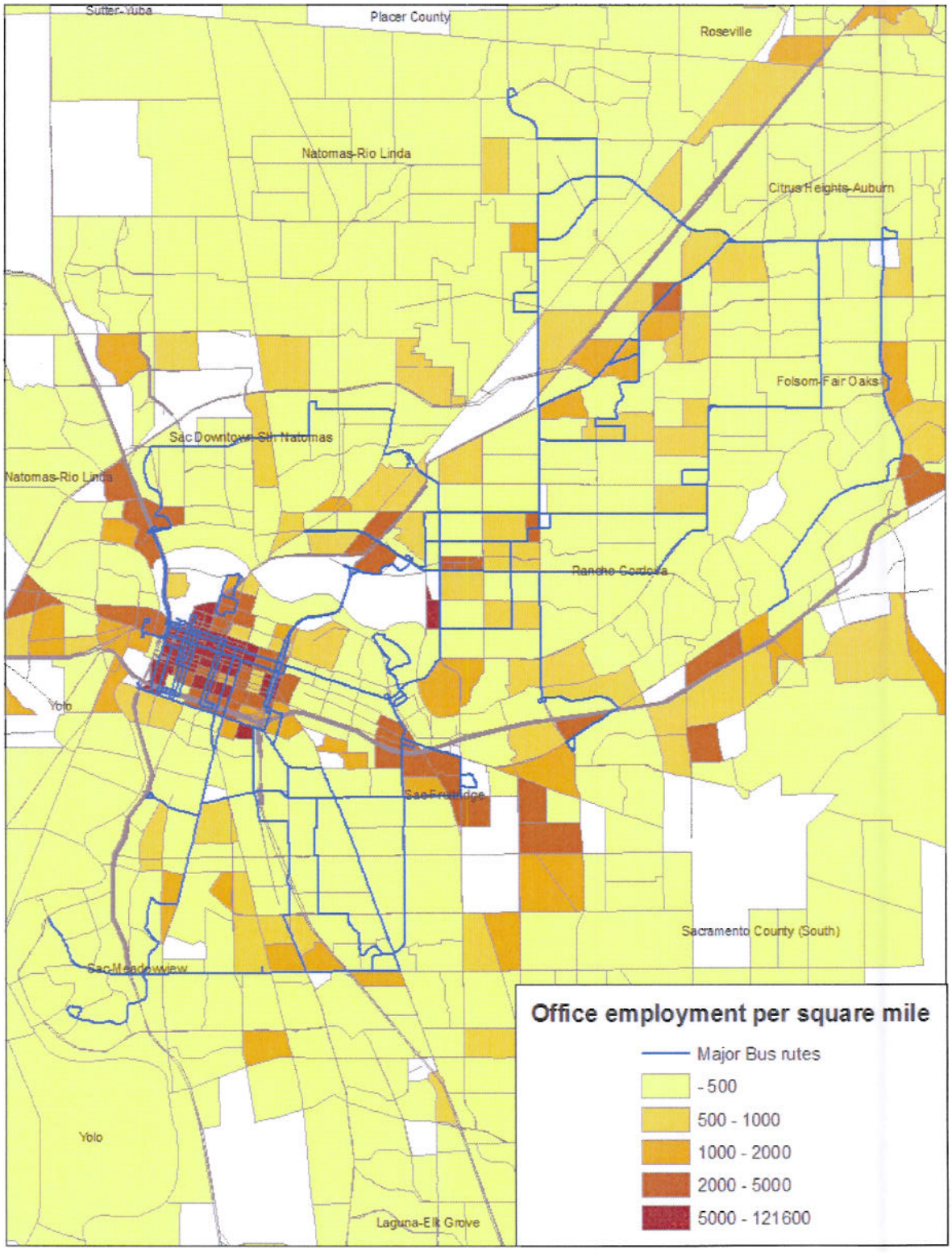


FIGURE 5.5 2035 EMPLOYMENT (OFFICE) DENSITY FORECAST



A Fully Integrated Scenario

5.24 Scenario C represents a fully integrated solution with transit integrated between modes as well as with land use and Transportation Demand Management (TDM). It is intended to increase transit use by removing as many of the barriers as possible to transit use.

5.25 As a result, a number of non-mode/vehicle aspects of the transit trip have been developed and included in the scenario. These include:

- Integrated, Smartcard (cashless) fare system across all operators;
- Real-time information and next light rail/bus information provided at stations and stops;
- New sidewalks and pedestrian access improvements to all major stops and stations;
- New stations, shelters and stops;
- Landscaping and public art integrated into design;
- Wayfinding to help passengers get to and from stations/stops and local destinations;
- Increased funding for policing and cleaning the vehicles and network; and
- Closed-Circuit Televis;ion (CCTV) safety cameras at all stops and on board all vehicles.

A Range of Transit Modes

5.26 Another aspect of a fully integrated network is providing a range of transit modes which serve the various functions of travel, such as light rail through busy corridors for daily commuters or local bus services within communities for leisure purposes.

5.27 Tables 5.4 and 5.5 are provided to help clarify the differences and key characteristics of the rail-based and bus-based options included in Scenario C, the Integrated Transit Solution.

TABLE 5.4 RAIL BASED TRANSIT MODES

Characteristic	Commuter Rail	Light Rail (LRT)	Low Floor European Street Tram	Streetcar
Right-of-way	Operates on railroad tracks (sometimes shared with freight services)	Operates in own segregated rail right of way or on-street, segregated or mixed with other traffic	Operates on a mix of rights-of-way including former railway, segregated on-street or on-street mixed with other traffic	Operates on-street, mixed with other traffic
Vehicle type	90-120 foot long vehicles joined together, often with 3 or more carriages	90-120 foot long vehicles that can be joined together	90-120 foot electric-powered vehicles - can be joined together if needed	60-70 foot long vehicles that run as single units
Vehicle passenger capacity	150 passengers per vehicle	180-200 passengers per vehicle	180-200 passengers per vehicle	120 passengers in modern, vintage or 'heritage-style' vehicles
Transit function	Typically used for longer distance intercity travel and commuting	Fast, efficient services connecting the downtown core with key nodes	Easy, accessible, street-level services connecting town centers or key nodes	Street-level services providing attractive links within communities
Similar to:	The existing Capitol Corridor services	The existing Blue and Gold Line LRT services	European Tram systems in Montpellier (France) and Nottingham (England)	US streetcar systems in Portland and Seattle
Illustrative example				

TABLE 5.5 BUS BASED TRANSIT MODES

Amenities	Hi-Bus			Local Services	
	Bus Rapid Transit (BRT)	Enhanced Bus	Express Bus	Fixed Route	Circulator
Stops:					
Flag/Seating/Shelter	■	■	■	■	■
Route information	■	■	■	■	■
Real-time Information	■	■	■	■	■
CCTV Camera	■	■	■	■	■
Level boarding	■				
Vehicles:					
Mini-Midi Buses					■
40-ft Buses		■	■	■	
Articulated Buses	■	■			
Branded vehicles	■				
Stop Announcements	■	■	■	■	
Onboard CCTV	■	■	■	■	■
Connections:					
Within Neighborhood					■
Between Neighborhoods		■	■	■	■
Between Town Centers	■	■	■	■	■
Route:					
Mixed with traffic	■	■	■	■	■
Traffic signal priority	■	■	■		
Limited stops	■	■	■		
15-min frequency or better	■	■			
Bus/HOV lanes	■	■	■		
Bus-only lanes	■	■			

Developing Scenario C

5.28 Scenario C includes significant increases in both capital, operating costs and projects, including:

- Regional Rail: improvements both within the Capitol Corridor and services south to Stockton;
- Light Rail:
  - Gold Line extension towards El Dorado County;
  - Blue Line extensions to Elk Grove, Citrus Heights and Roseville;
  - DNA full build to the Sacramento International Airport; and
  - Full streetcar/European tram network;
- Bus: development of a Hi-Bus network and significant improvements to local bus services;
- Additional passenger safety measures and pedestrian environment improvements;
- Implementation of full program of facilities and maintenance infrastructure;
- Development of 'Complete Corridors' including improved walk access to stops; and
- Improved stops and stations.

5.29 One of the significant changes within Scenario C is the introduction of a 'Hi-Bus' network, a network of high frequency, high capacity, high speed bus routes that will augment the light rail/streetcar network to complete the regional high capacity transit system. This network will then be supported by a further set of local, community oriented services to help feed the high capacity network and cater to short, local trips.

5.30 Table 5.6 outlines the specific characteristics of Scenario C and Figure 5.6 illustrates the changes in the context of the greater Sacramento region. Table 5.7 compares all three scenarios.

TABLE 5.6 SCENARIO C CHARACTERISTICS

Mode/Service Type	2035 Changes
Regional Rail	Additional improvements and rolling stock to allow 15-min service plus new service from Stockton to Sacramento
Light Rail	-
Gold Line	Extension to El Dorado County
Blue Line	Extensions to Elk Grove, Citrus Heights and Roseville
DNA Line	Double-track to airport with passing loops for express services
Streetcar/Street Tram	Assumed that the whole streetcar network will be implemented as European Street Tram
BRT	BRT introduced on 10+ routes including those identified as Enhanced Bus in the MTP
Bus	250%+ increase in services including introduction of Hi-Bus network
Ticketing & Information	Real-time information at stops
Passenger Safety	Additional police and cameras
Stops, stations and pedestrian improvements	Improvements at all LRT, BRT and Hi-Bus Stops and along key corridors
Transit Vehicles, Maintenance Facilities & Other Capital Costs	Including 3rd LRT & Bus Depots, Headquarters and Inter-modal Terminal

FIGURE 5.6 SCENARIO C MAP

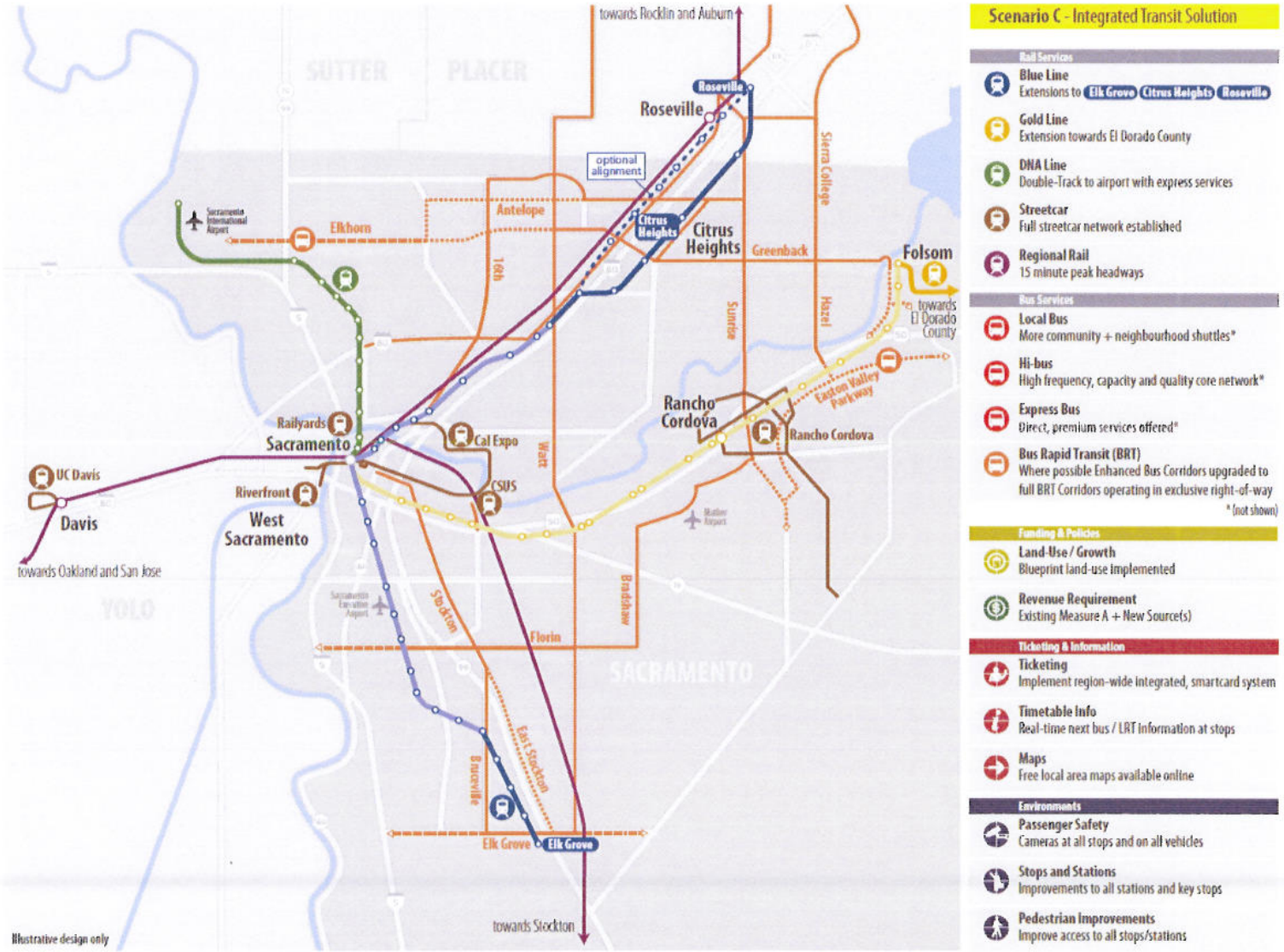


TABLE 5.7 SCENARIO CHARACTERISTICS COMPARISON

Project Area		Scenario A	Scenario B	Scenario C
Land use / Growth		Largely Suburban	Blueprint land use implemented	Blueprint land use implemented
Rail Services	Blue Line	South Line Phase 2 (Cosumnes College) Northeast Corridor Enhancements	South Line Phase 2 (Cosumnes College) Northeast Corridor Enhancements	Scenario B + Elk Grove, Citrus Heights & Roseville Extensions
	Gold Line	No Changes	Double-Track to Folsom, New station at Mineshaft	Scenario B + El Dorado Extension
	DNA Line	Phase 1 to Richards Blvd.	Single-track to Airport	Double-track to Airport with 'express' services
	Streetcar	None	Downtown-West Sac and Rancho Cordova	Downtown-West Sac, Rancho Cordova, Davis, CSUS, and Midtown
	Capitol Corridor	No change (40-120 min headways)	30-min headways	15-min headways
Bus Services	Local Services	Periodic reviews to optimize the network providing the same overall level of service	150% increase in local fixed route services	Significant increase in local service, plus community circulators and Van Pools
	Hi-Bus/Express Bus	No incremental changes	Express peak services on new carpool lanes Enhanced bus introduced in 6 corridors - Antelope, Stockton, Watt, Florin, Elk Grove, Sunrise	Hi-Bus on key corridors plus direct, premium commuter express routes
Ticketing & Information	Ticketing	Implementation of smartcard ticketing system	Implement integrated, regional smartcard	Implement integrated, regional smartcard
	Timetable Info	Printed timetables and information available online	Real-time vehicle tracking linked to information at stops	Real-time vehicle tracking linked to information at stops, cell phones & online
	Maps	System Map available online and in print	System Map available online and in print	Free customizable local area maps online
Passenger Safety		No incremental change	Install security cameras at 50 light rail stations	Install security cameras at all stations and on all vehicles and more police officers
Stops and Stations		No incremental changes	Targeted station area improvements	Full 'uplift' of all LRT stations plus replace bus stops at key locations with bus stations
Pedestrian Improvements at Stops & Stations		No incremental changes	Targeted improvements for pedestrian access and wayfinding to LRT stations	Pedestrian improvements to all key stations with wayfinding to key destinations
Total Estimated Costs		**$2.6B**	**$4.6B**	**$6.9B**

Developing Scenario C+

5.31 As mentioned earlier, the development of the TransitAction Plan was done through a highly consultative process with input provided by the public, stakeholders and advisory committees. Full details of the public outreach process are provided in Chapter 6. After the first phase of public consultation, it was clear that Scenario C was the preferred transit network. Some of the most important aspects that the public envisions in an attractive transit service include a safe and secure network with reliable and punctual service. The rest of this chapter describes how each of the three scenarios was then modeled to forecast the likely ridership they would generate by 2035.

Ridership Forecasting

5.32 There are a number of modeling software packages available covering the Sacramento region including PLACES, SACMET and SacSim. Following a review of each of the models and discussions with RT and SACOG, it was agreed that the SACMET model be used to test the scenarios.

The SACMET Model

5.33 SACMET is a four stage transportation model with 1,500 zones under the TP+ platform and was used for all modeling work for SACOG's MTP2035 as well as by RT in developing their funding applications to the Federal Transit Administration for the South Sacramento Light Rail Project. The model includes:

- All six counties in the SACOG region;
- Networks for 2005 and 2035;
- Two land use scenarios - one 'Blueprint' scenario is coded for 2035 and a 'worst case' scenario, which is a continuation of 2005 growth patterns out to 2035;
- For highway, AM, PM, Midday and evening periods are represented;
- For public transit there are AM and Midday periods; and
- Public transit is coded as one mode only (e.g. no differences between light rail and Hi-Bus) but differences are represented by mode of access (drive or walk, with light rail stops having park and ride facilities).

5.34 The model includes 250 operational routes all split by operator, mode and fare.

Modeling Assumptions

5.35 For each scenario, the routes, frequencies, hours of operation and speed of services were coded into the model. Table 5.8 presents a summary of the assumptions used in modeling each scenario.

TABLE 5.8 SUMMARY OF MODELING ASSUMPTIONS

Assumption	Scenario A	Scenario B	Scenario C
Land use Assumption	Continuation of 2005 Growth	Blueprint Land use	Blueprint Land use
Service Hours			
Peak	5:00AM-9:00AM 3:30PM-6:00PM	5:00AM-9:00AM 3:30PM-6:00PM	5:00AM-9:00AM 3:30PM-6:00PM
Off Peak	9:01AM-3:29PM 6:01PM-8:00PM	9:01AM-3:29PM 6:01PM-8:00PM	9:01AM-3:29PM 6:01PM-12:00PM
LRT/Streetcar Frequencies (peak/off peak)			
Gold Line	15 / 15 (30 Folsom)	15 / 15 (SMF - Folsom)	5 / 10 (SMF-Iron Point) 10 / 20 (Iron Point - Folsom/El Dorado)
Blue Line	15 / 15	10 / 15	5 / 10
Downtown Streetcar	N/A	15 / 15	5 / 10
Rancho Cordova Streetcar	N/A	30 / 30	3 line network with 10 / 20 on each line
Citrus Heights-Rancho Cordova Streetcar	N/A	N/A	5 / 10
Bus Frequencies (peak/off peak)			
Local Services	2008 levels	15/20/30/60+	10-15 / 20-30
Hi-Bus	N/A	15/20/30/60+	5 / 10
LRT/Streetcar Operating Speeds (mph)			
Gold Line	22.4 (Dtn-Sunrise) 26.2 (Dtn-Folsom)	24.6 (SMF-Folsom)	24.6 (SMF-Folsom) 23.9 (SMF-El Dorado)
Blue Line	19.6	21.3	24.7
Downtown Streetcar (Loops)	N/A	10.8	18.2 (North Loop) 16.3 (South Loop)
Rancho Cordova Streetcar	N/A	20.6	20.6 (South Loop) 20.8 (North Loop) 20.7 (Jackson Hwy)
Citrus Heights-Rancho Cordova Streetcar	N/A	N/A	24.6
Bus Operating Speeds (as a function of highway speed)			
Local Services	2.01	2.01	2.01
Hi-Bus	N/A	1.62	1.3

Modeled Ridership Forecasts

5.36 The model was then run for each scenario and ridership forecasts were produced. These are summarized in Table 5.9 by mode.

Assumptions and Sensitivity Testing

5.37 In addition to testing the three scenarios a number of sensitivity tests were undertaken to assess the likely impact on transit system performance. These included:

- Increases to gas prices;
- Land use changes where more of the population are located nearer to the high capacity transit network; and
- Increases to parking costs (to test the impact of TDM and complementary measures).

5.38 Each of these sensitivity tests was run on the Scenario C network, first individually and then in combination to test the impacts of a fully integrated package of transit, land use and TDM measures. The addition of all three sensitivity tests on Scenario C created the Scenario C+ network option. As such, the Scenario C+ transit network is the same as Scenario C, the only difference being the assumption that in the future, gas will be more expensive, more people will live closer to transit and parking will be more expensive. The results of these tests are presented in Table 5.9 and graphically in Figure 5.7.

5.39 Modeled results demonstrate that Scenario C+ experiences a significant increase in transit ridership over Scenario A and that the large increases in service hours provided in Scenario C/C+ provides a substantial increase in ridership over Scenario B. However, through the integration of land use and with complementary measures, an even greater number of riders would be attracted to the network.

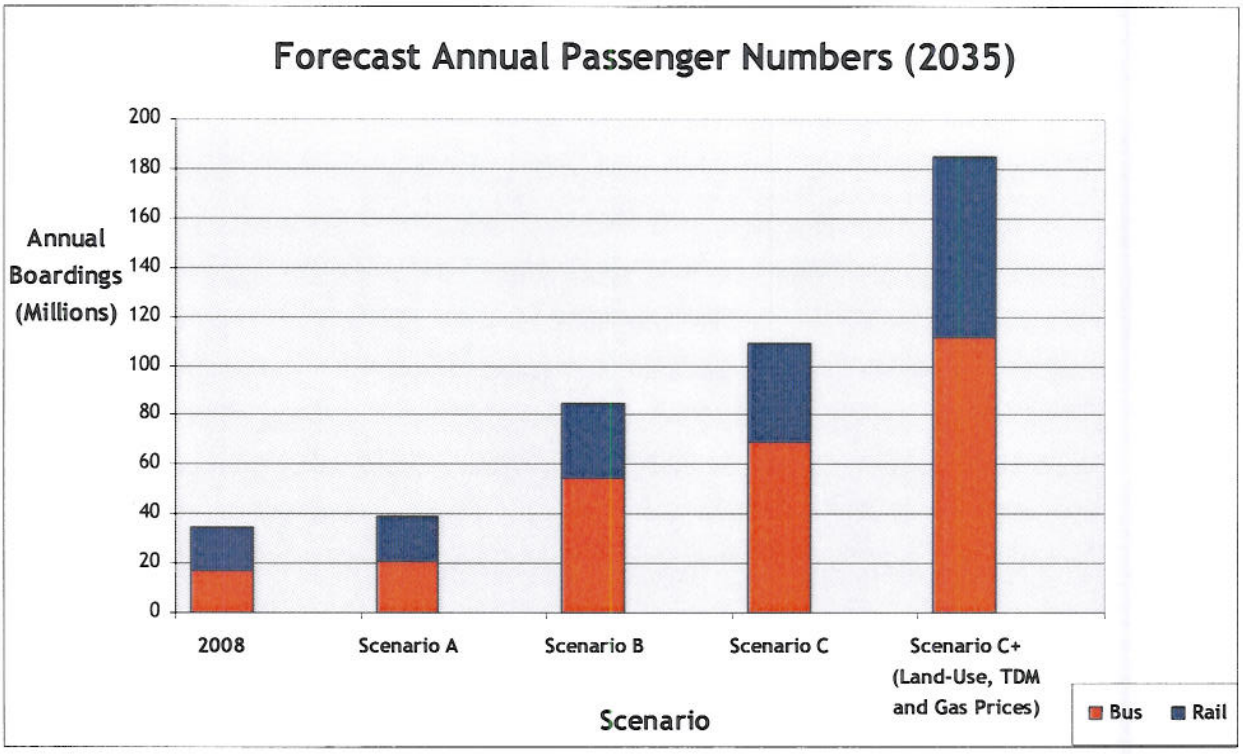
TABLE 5.9 2035 MODELED RIDERSHIP

Scenario	Annual Boardings			Increase in Ridership	
	Bus	LRT	Total	% Change over A	% Change over B
Scenario A	20.5m	18.7m	**39.2m**	-	-
Scenario B	54.4m	30.1m	**84.4m**	115.4%	-
Scenario C	69.0m	40.0m	**109.0m**	178.3%	29.2%

TABLE 5.10 SENSITIVITY TEST RESULTS

Sensitivity	Annual Boardings		
	Bus	LRT	Total
Increased gas prices	80.8m	52.9m	133.7m
Intensification of land use	79.7m	47.0m	126.6m
Increased parking costs	76.4m	52.0m	128.4m
All three tests combined (Scenario C+)	111.6m	73.7m	185.3m

FIGURE 5.7 RIDERSHP FORECASTS



5.40 In addition, the sensitivity tests, in particular Scenario C+ (the combination of TDM, gas prices and intensification of land use), demonstrate a clear and emerging pattern that by changing the other variables in people's lives (in this case the cost of driving and proximity to transit), large increases in transit ridership will occur.

Scenario Evaluation

5.41 In order to compare and evaluate the three scenarios against each other in a consistent manner, an objectives-led evaluation framework was established. This was done to ensure that the preferred scenario and its individual components would be consistent with achieving the full range of objectives that were set for the TransitAction Plan.

The Multiple Account Evaluation Framework

5.42 A Multiple Account Evaluation (MAE) process was used to undertake a technical evaluation of the scenarios and in order to provide a consistent reference case, Scenarios B, C and C+ were each assessed against a common base case - Scenario A.

5.43 The evaluation framework was organized in three categories:

- Community;
- Environment; and
- Economy.

5.44 In addition to assessing the impacts of each scenario once fully built, the practical implications of implementing each scenario were assessed in a fourth account in the MAE under the heading of *Deliverability*.

Multiple Accounts

5.45 The following tables, Table 5.11 to Table 5.14, detail the specific criteria used to evaluate the scenarios and where possible the specific investments against each of the four accounts.

TABLE 5.11 COMMUNITY EVALUATION CATEGORY

Criteria	Measure	Role
Supportiveness of policies and aspirations	Supportiveness of local and regional land use and transportation plans and policies and local aspirations	Identification in strategic terms of consistency or inconsistency with other proposed plans or policies; stated community aspirations through General Plan processes
Land use integration	Identification of major activity centers served, e.g.: ▪ Population ▪ Hospitals & medical centers ▪ Major retail sites ▪ Principal colleges / universities ▪ Employers > 1000 employees	Ensuring the proposed scenario encompasses both current and future key demand attractors and generators and meets the requirements of transit to provide a service to and from where people wish to travel (geographic equity)
Transportation network integration	Identification of full trip benefits due to integration with transit transfer centers and interchange opportunities	Consideration of the network benefits that can be achieved, including both physical integration (i.e. good interchange opportunities) and system integration (i.e. timetabling connecting services, through ticketing)
Equity	Catchment analysis for social groups (households less than $30k) within walking access (15 minutes) to a stop	Consideration of those who may receive greatest benefit from the transit investment due to current barriers to travel and opportunities for them
Safety	Direct safety impacts due to the design (i.e. physically segregated, running with general traffic, on-street stops). Indirect safety due to volume of mode transfer to transit system	Identification of safety aspects ensures adherence to good siting and design standards for direct safety impacts
Health (Promote physical activity)	Comprehensiveness of pedestrian and cycling network Increase in average bicycle and pedestrian mode share	Benefits from promoting physical activity due to greater pedestrian access to transit and increased walking and cycling within the corridor

TABLE 5.12 ENVIRONMENT EVALUATION CATEGORY

Criteria	Measure	Role
Emissions & disturbance	Change in VMT and resulting emission levels for CO2	Impacts on local air pollution, greenhouse gases and noise; transportation related environmental impacts tend to track closely to VMT, making it a valuable proxy for emissions and air quality related measures
Place-making/urban form	Identification of impacts on urban composition and public space function	Impacts on the potential to enhance land development; increase mix of land uses; enhance public spaces as places for people; allow a car-free lifestyle

TABLE 5.13 ECONOMY EVALUATION CATEGORY

Criteria	Measure	Role
Transportation efficiency (Users)	Average travel time benefit per rider and resulting benefit cost ratio	The average travel time benefit will demonstrate the effectiveness of the transit improvements
Transportation efficiency (Operator)	Farebox recovery	To identify the financial performance of the day-to-day operations
Economic competitiveness	Change in employment catchment for employment centers (in the base case) and identification of impacts on supporting redevelopment of industrial commercial sites	Improved transit and land use will increase the labor market's access to employment centers and promote re-development of employment sites

TABLE 5.14 DELIVERABILITY EVALUATION CATEGORY

Criteria	Measure	Role
Feasibility (Construction)	Any technological challenges for construction Capital cost	The negative impacts from the construction of the project may be so great as to outweigh the benefits of the resulting scheme
Feasibility (Operations)	Operating cost	The design of the project must enable it to be efficiently operated
Acceptability	Public and political support for the project/investment	Since a high level of local commitment is required for project development, communities that display strong commitment to project success should be rewarded
Funding potential	Initial assessment of local and federal funding opportunities to cover estimated capital and operating costs	Most projects will not have funding sources identified; the intent to the measure is to assess obstacles to successful funding or reward any project that has substantial identified local funding; a more detailed funding plan will be required at the project advancement phase

Scenario Evaluation Results

5.46 The evaluation used a combination of quantitative and qualitative measures, depending on the level of information available to assess the overall scenarios in meeting the TransitAction Plan objectives.

5.47 Quantitative data was drawn from a number of sources, including the internal RT financial model, geographical information system analysis and SACOG's SACMET model.

5.48 Where the evaluation was more qualitative in nature, a seven-point scale was used:

- Significant benefit (+++);
- Moderate benefit (++);
- Slight benefit (+);
- Neutral (0);
- Slightly adverse (-);
- Moderately adverse (--); and
- Significantly adverse (---).

5.49 The tables on the following pages provide a summary of the evaluation of each of the three options as well as for Scenario C+. The text that follows then provides a summary of the assessment by account.

TABLE 5.15 SCENARIO A EVALUATION

Evaluation Framework Summary Sheet			
Scenario	Scenario A		
Description:	Continued land-use pattern (sprawl) and financially constrained highway and transit network as detailed in SACOG's Metropolitan Transportation Plan (MTP) 2035		
Evaluation Category	**Criteria**	**Commentary**	**Assessment**
COMMUNITY	Support of policies & aspirations	Not consistent with Blueprint and MTP. Decline in mode transfer by 2035.	Base Case
	Land use integration	192,000 population within 15 minute walk of high frequency transit services. 1,011,400 population within 15 mins walk to transit. 2 colleges, 2 hospitals, 4 shopping centres and 12 major employers within 10 mins (half a mile) of transit.	Base Case
	Transport network integration	Increased transit provision provides improved network integration but limited investment in system integration.	Base Case
	Equity	17,600 households less tha $30k within 15 min walk of high frequency transit services. 60,100 households within 15 mins walk to transit.	Base Case
	Safety	Limited mode transfer will result in reduced traffic demand on roads and estimated reduction of 10 fatalities.	Base Case
	Health	Walk and cycle demand mode share of 5.9% by 2035 (573,000 daily trips).	Base Case
ENVIRONMENT	Emissions & disturbance	1.4 million daily Vehicle Miles Travelled (VMT) by 2035.	Base Case
	Placemaking/Urban Form	Limited expansion of rail-based systems will provide opportunity to improve public realm. Restricted TOD opportunities.	Base Case
ECONOMY	Transport efficiency (Users)	31,000 passenger transit hours (daily by 2035). 1.0% mode share (100,000 daily transit trips).	Base Case
	Transport efficiency (Operators)	Farebox recovery (operating costs/fare revenue) at 18%	Base Case
	Economic competitiveness	202,000 jobs within 15 min walk of high frequency transit services. 399,000 jobs within 15 mins walk to transit.	Base Case
DELIVERABILITY	Feasibility (Construction)	$2.23bn ($2008, PV)	Base Case
	Feasibility (Operations)	$5.49bn ($2008, PV)	Base Case
	Acceptability	7% respondents in favour of this scenario (out of 2,500 respondents, TMP outreach)	Base Case
	Funding Potential	Funding surplus of $220m ($2008, PV)	Base Case

TABLE 5.16 SCENARIO B EVALUATION

Evaluation Framework Summary Sheet			
Scenario	Scenario B		
Description:	Blueprint Preferred Alternative land-use is delivered and transit network is as proposed in SACOG's Metropolitan Transportation Plan (MTP) 2035		
Evaluation Category	**Criteria**	**Commentary**	**Assessment**
COMMUNITY	Support of policies & aspirations	Consistent with Blueprint and MTP - which based on the jurisdictions' plans and policies. Limited mode transfer.	+++
	Land use integration	234,000 population within 15 minute walk of high frequency transit services. 1,189,000 population within 15 mins walk to transit. 2 colleges, 2 hospitals, 4 shopping centres and 12 major employers within 10 mins (half a mile) of transit.	+
	Transport network integration	Transit provision provides large geographical coverage but low frequency levels.	+
	Equity	20,300 households less tha $30k within 15 min walk of high frequency transit services. 65,000 households within 15 mins walk to transit.	+
	Safety	Mode transfer will result in reduced traffic demand on roads and estimated reduction of 10 fatalities.	+
	Health	Walk and cycle demand mode share of 6.5% by 2035 (619,000 daily trips).	+
ENVIRONMENT	Emissions & disturbance	Reduction in 6.1% Vehicle Miles Travelled (VMT) compared to Scenario A. Equivalent to 207 tonnes of CO2.	++
	Placemaking/Urban Form	Limited expansion of rail-based systems will reduce opportunities to improve public realm. Limited transit provision will restrict TOD opportunities.	+
ECONOMY	Transport efficiency (Users)	Average time saving of 1.4 minutes per transit user (4,470 daily hours saved) compared to Scenario A. BCR of 0.60. Mode share of 2% (193,000 daily trips).	++
	Transport efficiency (Operators)	Farebox recovery (operating costs/fare revenue) at 18%	Neutral
	Economic competitiveness	224,000 jobs within 15 min walk of high frequency transit services. 438,000 jobs within 15 mins walk to transit.	+
DELIVERABILITY	Feasibility (Construction)	$3.59bn ($2008, PV)	-
	Feasibility (Operations)	$11.22bn ($2008, PV)	-
	Acceptability	20% respondents in favour of this scenario (out of 2,500 respondents, TMP outreach)	++
	Funding Potential	Funding shortfall of $2.8bn ($2008, PV)	-

TABLE 5.17 SCENARIO C EVALUATION

Evaluation Framework Summary Sheet			
Scenario	Scenario C		
Description:	Extends the transit offer (beyond Scenario B) providing a fully integrated package linking the Blueprint with a comprehensive set of Transit, transportation demand management (TDM) and transit oriented development (TOD) policies and projects		
Evaluation Category	**Criteria**	**Commentary**	**Assessment**
COMMUNITY	Support of policies & aspirations	Consistent with Blueprint. Integrated transit provision results in increased transit ridership.	+++
	Land use integration	990,000 population within 15 minute walk of high frequency transit services. 1,206,000 population within 15 mins walk to transit. 7 colleges, 11 hospitals, 10 shopping centres and 21 major employers within 10 mins (half a mile) of transit.	++
	Transport network integration	Enhanced transit measures (shelters, passenger information, pavements, etc) improves all aspects of transit trip making. Increase in rail-based and high frequency buses will improve access to frequent transit services.	+++
	Equity	58,000 households less tha $30k within 15 min walk of high frequency transit services. 65,000 households within 15 mins walk to transit.	++
	Safety	Increased rail-based systems provides safer travel. Enhanced transit facilities (lighting and security facilities) will provide a safe environment on and off bus. Mode transfer will result in reduced traffic demand on roads and estimated reduction of 10 fatalities.	+
	Health	Walk and cycle demand mode share of 6.6% by 2035 (630,000 daily trips).	+
ENVIRONMENT	Emissions & disturbance	Reduction in 6.4% Vehicle Miles Travelled compared to Scenario A. Equivalent to 217 tonnes of CO2.	++
	Placemaking/Urban Form	Expansion of rail-based systems will provide opportunity to improve public realm. Increased transit provision will also provide additional TOD opportunities.	++
ECONOMY	Transport efficiency (Users)	Average time saving of 1.8 minutes per transit user (6,420 daily hours saved) compared to Scenario A. BCR of 0.43. Mode share of 2.2% (213,000 daily trips).	++
	Transport efficiency (Operators)	Farebox recovery (operating costs/fare revenue) at 17%	Neutral
	Economic competitiveness	416,000 jobs within 15 min walk of high frequency transit services. 445,000 jobs within 15 mins walk to transit.	++
DELIVERABILITY	Feasibility (Construction)	$5.42bn ($2008, PV)	- -
	Feasibility (Operations)	$12.74bn ($2008, PV)	- -
	Acceptability	61% respondents in favour of this scenario (out of 2,500 respondents, TMP outreach)	+++
	Funding Potential	Funding shortfall of $7.5bn ($2008, PV)	- - -

TABLE 5.18 SCENARIO C+ EVALUATION

Evaluation Framework Summary Sheet			
Scenario	Scenario C+		
Description:	Scenario C plus TOD land use scenario developed by SACOG and robust Transportation Demand Management (TDM) - triple parking and gas prices		
Evaluation Category	**Criteria**	**Commentary**	**Assessment**
COMMUNITY	Support of policies & aspirations	TOD land use consistent with long term aspirations of jurisdictions. Largest increase in transit ridership.	+++
	Land use integration	1,089,000 population within 15 minute walk of high frequency transit services. 1,327,000 population within 15 mins walk to transit. 7 colleges, 11 hospitals, 10 shopping centres and 21 major employers within 10 mins (half a mile) of transit.	+++
	Transport network integration	Enhanced transit measures (shelters, passenger information, pavements, etc) improves all aspects of transit trip making. Increase in rail-based and high frequency buses will improve access to frequent transit services.	+++
	Equity	64,000 households less tha $30k within 15 min walk of high frequency transit services. 71,000 households within 15 mins walk to transit.	+++
	Safety	Increased rail-based systems provides safer travel. Enhanced transit facilities (lighting and security facilities) will provide a safe environment on and off bus. Mode transfer will result in reduced traffic demand on roads and estimated reduction of 10 fatalities.	+
	Health	Walk and cycle demand mode share of 7.9% by 2035 (782,000 daily trips).	+++
ENVIRONMENT	Emissions & disturbance	Reduction in 7.1% Vehicle Miles Travelled (VMT) compared to Scenario A. Equivalent to 243 tonnes of CO2.	+++
	Placemaking/Urban Form	Expansion of rail-based systems will provide opportunity to improve public realm. Increased transit provision will also provide additional TOD opportunities.	++
ECONOMY	Transport efficiency (Users)	Average time saving of 1.2 minutes per transit user (6,945 daily hours saved) compared to Scenario A. BCR of 0.43. Mode share of 3.6% (356,000 transit trips).	++
	Transport efficiency (Operators)	Farebox recovery (operating costs/fare revenue) at 29%	++
	Economic competitiveness	457,000 jobs within 15 min walk of high frequency transit services. 490,000 jobs within 15 mins walk to transit.	+++
DELIVERABILITY	Feasibility (Construction)	$5.42bn ($2008, PV)	- -
	Feasibility (Operations)	$12.74bn ($2008, PV)	- -
	Acceptability	61% respondents in favour of this scenario (out of 2,500 respondents, TMP outreach)	+++
	Funding Potential	Funding shortfall of $6.0bn ($2008, PV)	- -

Community Account

5.50 All scenarios show improvements against the Base Case. The proposed transit network of Scenario C increases the coverage and access considerably, both with population access to transit and, perhaps more importantly, access to high frequency transit services. This is replicated in the increased accessibility for low income population under the Equity category together with increased accessibility to major activity centers.

5.51 While Transportation Network Integration is a qualitative measure, it is clear that Scenario C and C+ will provide enhanced transit measures (shelters, passenger information, sidewalks) which will improve both access and perception of the transit system as a whole. Furthermore, these parameters are generally not represented in large regional forecasting models and as such these benefits (and the likely increase in ridership) have not been accounted for.

Environment Account

5.52 Reduction in CO2 emissions are directly related to the VMT removed from the road network with C+ showing the greatest VMT reduction.

5.53 The higher scores for Scenarios C and C+ in the place-making category are related to the higher level of rail-based systems provided, which will facilitate the re-development of urban areas and spaces and therefore improve public realm. Furthermore, increased transit provision and demand will enable additional TOD opportunities to be pursued.

Economy Account

5.54 Scenario C+ shows the highest passenger travel time savings and highest proportion of farebox recovery. In common with the population and low income walk catchment statistics presented previously, it also results in the largest number of jobs within walking catchment of transit services.

Deliverability Account

5.55 This is the account in which the results are reversed and Scenario B shows the lowest construction and operating costs together with the lowest funding shortfall. However, the Scenario C+ funding shortfall is considerably lower than for Scenario C, reflecting the higher fare revenues of this scenario. This is a direct result of the increased ridership form the land use and gas price and parking cost increases.

5.56 Public acceptability (detailed in Chapter 6) is overwhelmingly in favor of Scenario C (and C+), with only 20% for Scenario B and negligible (7%) for Scenario A.

Scenario Evaluation Summary Results

5.57 The evaluation demonstrated that Scenarios B, C and C+ all provide clear benefits in the Community and Environment accounts over Scenario A. In the Economy account Scenario C+ has the highest farebox recovery ratio and provides the highest travel time benefits to transit users along with greater job accessibility, particularly with high frequency transit services.

5.58 Where all scenarios fall short is on deliverability. There is a funding shortfall for all options as a result of the large increases in operating and capital costs. However, Chapter 9 reviews the range of funding options available to help close these funding gaps and then Chapter 10 examines the delivery plan.

5.59 In summary, these results demonstrate that Scenario C, in particular when combined with complementary land use and TDM measures is the preferred scenario and is the basis developing the details of the TransitAction Plan.