Members

Jack Dale, Chair
Councilmember, Santee
(Representing East County)

Matt Hall, Vice Chair
Mayor, Carlsbad
(Representing North County Coastal)

Judy Ritter
Mayor, Vista
(Representing North County Inland)

Jim King
Councilmember, Imperial Beach
(Representing South County)

Todd Gloria, Councilmember
City of San Diego

Ron Roberts, Chairman
County of San Diego

Harry Mathis, Chairman
Metropolitan Transit System

Bill Horn, Vice Chairman
North County Transit District

Tom Smisek
San Diego County Regional
Airport Authority

Alternates

Mary Sessom
Mayor, Lemon Grove
(Representing East County)

Terry Sinnott
Deputy Mayor, Del Mar
(Representing North County Coastal)

Sam Abed
Mayor, Escondido
(Representing North County Inland)

Mike Woiwode
Mayor Pro Tem, Coronado
(Representing South County)

Anthony Young, Council President
City of San Diego

Lorie Zapf, Councilmember
City of San Diego

Greg Cox, Vice Chairman
County of San Diego

Pam Slater-Price, Supervisor
County of San Diego

Dianne Jacob, Supervisor
County of San Diego

Al Ovrom
Metropolitan Transit System

Chris Orlando / Dave Roberts
North County Transit District

Jim Panknin
San Diego County Regional
Airport Authority

Advisory Members

Laurie Berman
District 11, Caltrans

Albert Phoenix (Barona)
Allen Lawson (San Pasqual)
Southern California Tribal
Chairmen’s Association

Gary L. Gallegos
Executive Director, SANDAG

TRANSPORTATION COMMITTEE AGENDA

Friday, May 18, 2012
9 a.m. to 12 noon
SANDAG Board Room
401 B Street, 7th Floor
San Diego

AGENDA HIGHLIGHTS

• STATE ROUTE 78 CORRIDOR STUDY REPORT

• INTEGRATING TRANSPORTATION DEMAND MANAGEMENT INTO THE PLANNING AND DEVELOPMENT PROCESS - A REFERENCE FOR CITIES

• MID-COAST CORRIDOR TRANSIT PROJECT STATUS UPDATE

PLEASE TURN OFF CELL PHONES DURING THE MEETING

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The 18 cities and county government are SANDAG serving as the forum for regional decision-making. SANDAG builds consensus, makes strategic plans, obtains and allocates resources, plans, engineers, and builds public transit, and provides information on a broad range of topics pertinent to the region's quality of life.

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TRANSPORTATION COMMITTEE
Friday May 18, 2012

ITEM #

+1. APPROVAL OF MAY 4, 2012, MEETING MINUTES

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Members of the public will have the opportunity to address the Transportation Committee on any issue within the jurisdiction of the Committee that is not on this agenda. Anyone desiring to speak shall reserve time by completing a “Request to Speak” form and giving it to the Clerk prior to speaking. Public speakers should notify the Clerk if they have a handout for distribution to Committee members. Public speakers are limited to three minutes or less per person. Committee members also may provide information and announcements under this agenda item.

CHAIR’S REPORT (3)

3. BIKE TO WORK DAY

May 18th is Bike to Work Day, which is a nationally recognized annual event that supports bicycling as a viable, environmentally friendly commute choice. A brief report on today’s Bike to Work activities will be provided.

REPORTS (4 through 9)

+4. 2010 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM: AMENDMENT NO. 18 (Michelle Merino)

On September 24, 2010, the Board of Directors adopted the 2010 Regional Transportation Improvement Program (RTIP), the multiyear program of proposed major highway, arterial, transit, and bikeway projects in the San Diego region covering the period FY 2011 to FY 2015. SANDAG processes amendments to the RTIP on a quarterly basis based on requests from member agencies. This amendment is administrative and is being processed outside of the regular quarterly amendment cycle. The Transportation Committee is asked to approve Amendment No. 18 to the 2010 Regional Transportation Improvement Program, pending funding approval by the California Transportation Commission for State Route 11.

+5. STATE ROUTE 78 CORRIDOR STUDY REPORT (Rachel Kennedy)

SANDAG, in collaboration with Caltrans, local jurisdictions, and other key stakeholders, has explored the feasibility of adding Managed Lanes, Toll Lanes, and other non-toll congestion management alternatives to State Route 78 (SR 78) to address regional and local travel demand within the corridor. The SR 78 Corridor Study explored issues related to right-of-way constraints and operations including interchanges with Interstates 5 and 15. The study
evaluated the effectiveness of Managed Lanes for improving corridor mobility, estimated revenues that could be collected through user fees for new toll lanes, and identified potential implementation strategies. The Transportation Committee is asked to accept the State Route 78 Corridor Study and its findings and to provide them to Caltrans for consideration in the project initiation document process.

6. INTEGRATING TRANSPORTATION DEMAND MANAGEMENT INTO THE PLANNING AND DEVELOPMENT PROCESS – A REFERENCE FOR CITIES (Antoinette Meier)

iCommute is the Transportation Demand Management (TDM) division of SANDAG. iCommute staff will present the final draft of "Integrating Transportation Demand Management Into the Planning and Development Process - A Reference for Cities." This document will serve as a resource for interested jurisdictions to proactively incorporate TDM strategies into local plans and programs. The Transportation Committee is asked to accept Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities as an additional resource in the Smart Growth Tool Box.

7. PROPOSED BUDGET AMENDMENT: LOW-FLOOR LIGHT RAIL TRANSIT VEHICLE PROCUREMENT (John Haggerty)

The Low-Floor Light Rail Transit (LRT) Vehicles Project (CIP 1210080) is funding procurement of 57 new low-floor light rail vehicles (LRVs) through an agreement with the Metropolitan Transit System (MTS). MTS has contracted with Siemens Industry Inc. to manufacture LRVs with an option to procure additional vehicles. The Transportation Committee is asked to recommend that the Board of Directors: (1) approve a budget amendment to increase the Low-Floor LRT Vehicles Project (CIP 1210080), from $240,243,000 to $271,143,000 in the proposed FY 2013 Program Budget to procure eight additional new low-floor LRVs (Attachment 1); and (2) authorize the Executive Director to execute an amendment to the existing Memorandum of Understanding between SANDAG and MTS Regarding Funding and Procurement of Low-Floor Light Rail Vehicles (SANDAG Contract No. 5001344), in substantially the same form as shown in Attachment 3.

8. FY 2013 TRANSPORTATION DEVELOPMENT ACT PRODUCTIVITY IMPROVEMENT PROGRAM (Phil Trom)

SANDAG is responsible for determining if the transit agencies have made a reasonable effort to implement the productivity improvement recommendations adopted by the Board of Directors for the current fiscal year. This item discusses the transit agency productivity improvements associated with the Transportation Development Act (TDA) Claim for FY 2013. The Transportation Committee is asked to recommend that the Board of Directors find that Metropolitan Transit System and North County Transit District made a reasonable effort to implement productivity improvements during FY 2012.
9. MID-COAST CORRIDOR TRANSIT PROJECT STATUS UPDATE
(Leslie Blanda, Greg Gastelu)m

Staff will provide a report on the status of the Mid-Coast Corridor Transit Project. The report will provide an overview of the project, describe the status of the current phase of project development, and describe the upcoming project development activities.

10. CONTINUED PUBLIC COMMENTS

If the five speaker limit for public comments was exceeded at the beginning of this agenda, other public comments will be taken at this time. Subjects of previous agenda items may not again be addressed under public comment.

11. UPCOMING MEETINGS

The next meeting of the Transportation Committee is scheduled for Friday, June 1, 2012, at 9 a.m.

12. ADJOURNMENT

+ next to an agenda item indicates an attachment
TRANSPORTATION COMMITTEE DISCUSSION AND ACTIONS
MEETING OF MAY 4, 2012

The meeting of the Transportation Committee was called to order by Chair Jack Dale (East County) at 9:01 a.m. See the attached attendance sheet for Transportation Committee member attendance.

1. APPROVAL OF MEETING MINUTES

Action: Upon a motion by Vice Chair Matt Hall (North County Coastal) and a second by Tom Smisek (San Diego County Regional Airport Authority [SDCRA]), the Transportation Committee approved the minutes from the April 6, 2012, meeting.

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Lorraine Leighton, member of the public, spoke regarding transit issues.

John Wotzka, member of the public, submitted written comments and spoke regarding various transportation issues in the San Diego Region.

CONSENT (3 through 4)

3. ADDENDUM TO THE FINAL MITIGATED NEGATIVE DECLARATION/INITIAL STUDY FOR OCEANSIDE SEGMENT 2B OF THE COASTAL RAIL TRAIL BIKEWAY PROJECT (ADOPT)

In April 2001, a Final Mitigated Negative Declaration/Initial Study (Final MND/IS) was prepared by the City of Carlsbad as the lead agency also representing the Cities of Oceanside, Encinitas, Solana Beach, and Del Mar. With this bikeway Project, SANDAG has updated the required environmental studies and prepared an Addendum to the approved Final MND/IS. Based on the analysis provided in the Addendum to the 2001 Final MND/IS, no new significant impacts have been identified. The Transportation Committee was asked to: (1) adopt the April 2001 Final MND/IS prepared by the City of Carlsbad as detailed in Attachment 2; (2) find that changes to the Final MND/IS would not result in any new significant or more severe environmental effects than those previously identified in the Final MND/IS; and (3) adopt the Addendum to the Final MND/IS for Oceanside Segment 2B of the Coastal Rail Trail Bikeway Project as detailed in Attachment 1.

4. AGREEMENT WITH STATE WATER RESOURCES CONTROL BOARD CONCERNING IMPLEMENTATION OF TransNet PROJECTS (APPROVE)

Since 2007, SANDAG has had an agreement with the Water Board to expedite the delivery of SANDAG TransNet-funded and other member agency transportation improvement projects. Staff
recommends that the agreement be authorized for another two years. The maximum amount of
the agreement is $410,000 over the two-year period. The Transportation Committee was asked to
authorize the Executive Director to execute an agreement with the Water Board to expedite the
delivery of TransNet projects in substantially the same form as Attachment 1. The new two-year
agreement would extend the scope of services currently delivered through an existing agreement,
which expires in June 2012 and additionally would allow cities and the County similar access for its
projects should they choose to participate. SANDAG costs under the new agreement would not
exceed $410,000.

**Action:** Upon a motion by Chairman Ron Roberts (County of San Diego) and a second by Mayor
Judy Ritter (North County Inland), the Transportation Committee approved Consent Items 3
through 4.

**REPORTS (5 through 7)**

5. **2010 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM: AMENDMENT NO. 17 (APPROVE)**

On September 24, 2010, the Board of Directors adopted the 2010 Regional Transportation
Improvement Program (2010 RTIP). The 2010 RTIP is the multiyear program of proposed major
highway, arterial, transit, and bikeway projects in the San Diego region covering the period FY 2011
to FY 2015. Amendment No. 17 is a regular quarterly formal amendment and reflects changes to
projects as requested by member agencies.

**Action:** Upon a motion by Mayor Ritter and a second by Chairman Roberts, the Tra nsportation
Committee adopted Resolution No. 2012-21 in substantially the same form as shown in
Attachment 1, approving Amendment No. 17 to the 2010 RTIP.

6. **TRANSPORTATION DEVELOPMENT ACT CLAIM AMENDMENTS FOR THE CITIES OF
CHULA VISTA, OCEANSIDE, SAN DIEGO, AND SANTEE (APPROVE)**

The FY 2011 Transportation Development Act (TDA) compliance audits for the Cities of Chula Vista,
Oceanside, and San Diego include unexpended funds from completed projects that are to be
returned to the Local Transportation Fund (LTF). The recommendation is that certain TDA
allocations for bicycle and pedestrian projects of these cities be reduced and those funds returned
to the LTF held with the County of San Diego as Trustee.

**Action:** Upon a motion by Chairman Roberts and a second by Mayor Ritter, the Transportation
Committee adopted Resolution No. 2012-22, as shown in Attachment 1, approving revisions to TDA
Article 3.0 claims for various Cities of Chula Vista, Oceanside, and San Diego completed bicycle and
pedestrian projects.

7. **STATE ROUTE 125 TOLL REDUCTION AND MARKETING PLAN (RECOMMEND)**

SANDAG acquired the State Route 125 franchise agreement last December with the Board's primary
goals to reduce traffic impacts on Interstate 805 while meeting the agency's financial obligations.

Samuel Johnson, Mobility Operations Director, presented toll reduction alternatives in support of
the Board's goals.
Gary Lawrence, Research Director, Lawrence Research, presented the results of the South Bay Expressway toll survey.

Colleen Windsor, Communications Director, presented the proposed marketing plan for Committee discussion.

Jim Schmidt, member of the public, submitted written comments and spoke in favor of the item.

Alejandra Mier y Teran, Otay Mesa Chamber of Commerce, spoke in favor of this item.

Cindy Gompper Graves, South County Economic Development Corporation, spoke in favor of this item.

John Taylor, Sweetwater Community Planning Group, spoke in favor of this item.

**Action**: Upon a motion by Vice Chairman Bill Horn (North County Transit District [NCTD]) and a second by Vice Chair Hall, the Transportation Committee recommended “Option C” as the preferred toll reduction option, and execution of the proposed marketing plan to the Board of Directors for approval.

8. CONTINUED PUBLIC COMMENTS

There were no further public comments.

9. UPCOMING MEETINGS

The next meeting of the Transportation Committee is scheduled for Friday, May 18, 2012, at 9 a.m.

13. ADJOURNMENT

Chair Dale adjourned the meeting at 9:56 a.m.

Attachment: Attendance Sheet
### CONFIRMED ATTENDANCE
### SANDAG TRANSPORTATION COMMITTEE MEETING
### MAY 4, 2012

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<th>GEOGRAPHICAL AREA/ORGANIZATION</th>
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<th>NAME</th>
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<td>City of Vista</td>
<td>Judy Ritter</td>
<td>Member</td>
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<td>Sam Abed</td>
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<td>Jack Dale (Chair)</td>
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<td>Ron Roberts</td>
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<td>Greg Cox</td>
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<td>Allen Lawson</td>
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<td>Jerome Stocks</td>
<td>Chair BoD</td>
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2010 REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM: Amended File Number 1500300

Introduction

On September 24, 2010, the Board of Directors adopted the 2010 Regional Transportation Improvement Program (RTIP), the multiyear program of proposed major highway, arterial, transit, and bikeway projects in the San Diego region covering the period FY 2011 to FY 2015. The 2010 RTIP is a multi-billion dollar program of projects funded by federal, state, TransNet local sales tax, and other local funding sources. The 2011 Federal Statewide Transportation Improvement Program (FSTIP), which incorporates the SANDAG 2010 RTIP, was approved on December 14, 2010.

Background

There are two types of RTIP amendments, formal and administrative. Formal amendments require, among other things, a 15-day public notice period, while administrative amendments are considered minor in nature and do not require a public notice period. Chapter 2 of the adopted 2010 RTIP provides additional details regarding the differences between formal and administrative amendments. Amendment No. 18 is considered administrative because it is consistent with the federally accepted administrative amendment procedures. The federal agencies delegated the approval of administrative amendments to the state, thereby streamlining the approval process.

Discussion

SANDAG is processing an administrative amendment in addition to the regular quarterly amendment in order to allow federal Regional Surface Transportation Program (RSTP) funds to be obligated this fiscal year. This amendment also includes additional changes to other projects as requested which are unable to wait until the approval of the 2012 RTIP Update.

Also included in the amendment is the addition of Corridors and Border Infrastructure (CBI) program funds. CBI programming changes must be approved by the California Transportation Commission (CTC). Although the programming and allocation of the CBI funds are scheduled for the June 2012 meeting, the processing of programming actions associated with other projects included in this amendment can proceed upon approval by the Transportation Committee. The proposed revisions to those projects are described below. Additional information is included in Table 1 (Attachment 1).

Recommendation

The Transportation Committee is asked to approve Amendment No. 18 to the 2010 Regional Transportation Improvement Program, pending funding approval by the California Transportation Commission for State Route 11 (SR 11).
State Route (SR) 76 East (CAL29B) - At its April 2012 meeting, the CTC approved $34.8 million of Proposition 1B - Corridor Mobility Improvement Account (CMIA) funding. This amendment proposes to exchange a like amount of federal Regional Surface Transportation Program (RSTP) with CMIA funds, which would allow the federal funds to be programmed on another TransNet Early Action Program project San Elijo Lagoon (Cardiff to Craven) Double Track - SAN73 (shown below), and leveraging TransNet funds. Total project remains at $201,549,000.

Highway Bridge Program (HBP) (CAL44) - This amendment proposes to update projects included in this lump sum as updated by Caltrans on March 22, 2012. Total amount programmed increases to $146,338,000.

I-805 HOV/Managed Lanes - South (CAL78C) - This amendment proposes to move RSTP funds from FY 2012 to FY 2013. Total project remains at $231,016,000.

Grouped Projects For Highway Safety Improvement - HSIP Program (CAL105) - This amendment proposes to increase funding for this group listing. Total amount programmed increases to $16,239,000.

At its March meeting, the CTC approved the 2012 State Highway Operations and Protection Program (SHOPP) that covers the four years from Fiscal Years (FFY) 2012-13 through FFY 2015-16. The majority of these projects are included in the 2012 RTIP Update; however, some projects will need to begin work before the federal approval of the 2012 RTIP, estimated to occur in December 2012. This amendment proposes to increase funding for the following grouped project listings in order to begin work this summer:

Grouped Projects for Bridge Preservation (CAL46D) - $17,549,000
Grouped Projects for Pavement Resurfacing and/or Rehabilitation - SHOPP Roadway Preservation Program (CAL46E) - $230,754,000

North County Transit District

Expanded Transit Service (NCTD34) - On April 30, 2012, Caltrans, Division of Mass Transportation (DMT), awarded Federal Transit Administration (FTA) Section 5316 – Job Access and Reverse Commute (JARC) and Section 5317 – New Freedom (NF) programs funds to various projects for rural areas in the San Diego Region, in which NCTD received $242,000 of JARC funds. This amendment proposes to add this funding which increases the project to $181,692,000.

San Diego Association of Governments

Grouped Projects for Operating Assistance - FTA Section 5317 New Freedom Program (SAN58)/ Grouped Projects for Capital Purchases through FTA Section 5317 New Freedom Program (SAN179) - Some nonprofit organizations also received JARC and NF funds from Caltrans DMT. SANDAG acts as a pass through agency for these funds, and programs them to allow these projects to be included in the grant application. This amendment proposes to revise funding for SAN58 and combine like projects for capital purchases for the grouped project listing SAN179. Total amount programmed for SAN58 decreased to $3,311,000 and total amount programmed for SAN179 is $696,000 respectively.
San Elijo Lagoon (Cardiff to Craven) Double Track (SAN73) – This amendment proposes to add RSTP from CAL29B, resulting from new Proposition 1B CMIA funds having been approved by the CTC for the 76/I-15 project (CAL29B), as discussed above. Total programmed increases to $44,730,000.

Grouped Projects for Operating Assistance - FTA Section 5316 JARC program (SAN97) - As stated above, the San Diego region was awarded additional JARC funds for FFY 2012. This amendment proposes to increase amount programmed to $342,000.

San Diego Metropolitan Transit System

Senior Disabled Program (MTS33A) – This amendment proposes to increase TransNet - Americans with Disabilities Act (ADA) funding. Total project increases to $3,470,000.

JARC Operations (MTS43) – This amendment proposes to add approximately $180,000 of JARC funding which was awarded by Caltrans DMT. Total project increases to $8,580,000.

San Diego, City of

West Mission Bay Drive Bridge (SD70) – This amendment proposes to revise funding between fiscal years and reduce funding to reflect the updated March 2012 HBP listing. Total project decreases to $120,100,000.

San Marcos, City of

Via Vera Cruz Bridge and Street Improvements (SM32) – This amendment proposes to move construction funds to years which are beyond the current RTIP cycle based on the updated HBP listing provided by Caltrans in March 2012. Total amount programmed decreases to $2,039,000.

Various

State Route 11 (V11) – This is a joint project between Caltrans and SANDAG. Currently the planning and feasibility study portion of the project is being implemented by SANDAG while Caltrans is performing the environmental clearance work. This amendment proposes to revise project funding by programming an additional $14.5 million of federal Corridors and Borders Infrastructure Program (CBI) in FFY 2012 and reducing local funds by the same amount, in order for Caltrans to obligate these funds for the right-of-way phase this federal fiscal year. Total project remains at $722,901,000.

Fiscal Constraint Analysis

Federal regulations require the 2010 RTIP to be a revenue-constrained document with programmed projects based upon available or committed funding and/or reasonable estimates of future funding. Funding assumptions are generally based upon: (1) authorized or appropriated levels of federal and state funding from current legislation; (2) conservative projections of future federal and state funding based upon a continuation of current funding levels; (3) the most current revenue forecasts for the TransNet program; and (4) the planning and programming documents of the local transportation providers.
As an administrative amendment, an updated fiscal constraint analysis is not required. The proposed change included in Amendment No. 18 does not affect the fiscal constraint submitted as part of Amendment No. 16 to the 2010 RTIP; the last federally approved formal amendment that updated the financial capacity for the 2010 RTIP. Chapter 4 of the Final 2010 RTIP discusses in detail the financial capacity analysis of major program areas, including discussion of available revenues. The 2010 RTIP, including Amendment No. 18, continues to be reasonable when considering available funding sources.

Air Quality Analysis

On September 24, 2010, SANDAG found the 2010 RTIP in conformance with the Regional Air Quality Strategy/State Implementation Plan (SIP) for the San Diego region. All of the required regionally significant capacity increasing projects were included in the quantitative emissions analysis conducted for the 2050 San Diego Regional Transportation Plan: Our Region Our Future (2050 RTP) and the 2010 RTIP. The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) jointly approved the conformity redetermination for the 2010 RTIP and the conformity determination for the 2050 RTP on December 2, 2011.

The proposed amendment does not reflect a change in the design, concept, or scope of the project or the conformity analysis years as modeled for the regional emissions analysis of the 2010 RTIP and 2050 RTP. The project in RTIP Amendment No. 18 meets the conformity provisions of the Transportation Conformity Rule (40 CFR §93.122(g)) and SANDAG followed interagency consultation procedures to determine that these projects are exempt adhering to all applicable transportation planning requirements per 23 CFR Part 450. The 2010 RTIP, including Amendment No. 18, remains in conformance with the SIP.

LESLIE CAMPBELL
Department Director of Finance (Acting)

Attachment: 1. Table 1, 2010 Regional Transportation Improvement Program, Amendment No. 18

Key Staff Contact: Michelle Merino, (619) 595-5608, Michelle.Merino@sandag.org
### San Diego Region (in $000s)

**Table 1**

**2010 Regional Transportation Improvement Program**  
**Amendment No. 18**  
**San Diego Region (in $000s)**

<table>
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<tr>
<th>MPO ID: CAL29B</th>
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**PROJECT LAST AMENDED 10-13**

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### Caltrans

**MPO ID:** CAL44  
**RTIP #:** 10-18  
**San Diego Region (in $000s)**

**Project Title:** Highway Bridge Program  
**Project Description:** Countywide - projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories – widen narrow pavements or reconstructing bridges (no additional travel lanes)  
**Change Reason:** Increase funding  
**Capacity Status:** NCI  
**Exempt Category:** Safety - Non capacity widening or bridge reconstruction

**Est Total Cost:** $146,338

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**MPO ID:** CAL46D  
**RTIP #:** 10-18  
**San Diego Region (in $000s)**

**Project Title:** Grouped Projects for Bridge Preservation  
**Project Description:** Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 category - widening narrow pavements or reconstructing bridges (no additional lanes)  
**Change Reason:** Increase funding  
**Capacity Status:** NCI  
**Exempt Category:** Safety - Non capacity widening or bridge reconstruction

**Est Total Cost:** $17,549

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<td>$1,449</td>
<td>$10,352</td>
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<td>$1,341</td>
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<td>$1,817</td>
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<td><strong>TOTAL</strong></td>
<td><strong>$17,549</strong></td>
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<td><strong>$11,693</strong></td>
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**PROJECT LAST AMENDED 10-14**

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<tr>
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<td>$1,449</td>
<td>$10,352</td>
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Wednesday, May 9, 2012
San Diego Region (in $000s)

2010 Regional Transportation Improvement Program
Amendment No. 18

San Diego Region (in $000s)

Caltrans

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**Project Title:** Grouped Projects for Pavement Resurfacing and/or Rehabilitation - SHOPP Roadway Preservation Program

**Project Description:** Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories – pavement resurfacing and/or rehabilitation, emergency relief (23 USC 125), widening narrow pavements or reconstructing bridges (no additional travel lanes)

**Change Reason:** Increase funding

**Capacity Status:** NCI

**Exempt Category:** Safety - Pavement resurfacing and/or rehabilitation

**Est Total Cost:** $230,754

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**PROJECT LAST AMENDED 10-12**

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**2010 Regional Transportation Improvement Program**  
**Amendment No. 18**  
**San Diego Region (in $000s)**

### Caltrans

**MPO ID:** CAL78C  
**RTIP #:** 10-18

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<td>From Palomar Street to Landis Street - environmental document for I-805 widening in San Diego, Chula Vista, and National City from Palomar Street to State Route 94; design and construct 2 High Occupancy Vehicle (HOV) lanes in the median of I-805 including a Direct Access Ramp (DAR) at Palomar Street</td>
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#### Capacity Status: CI  
**Exempt Category:** Non-Exempt

#### RT: 805

| IM | $975 | $975 | $975 | $975 | $975 |
| RSTP | $15,661 | $4,113 | $5,548 | $6,000 | $9,661 | $6,000 |
| Prop 1B - CMIA | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 |
| TransNet - MC | $114,158 | $13,870 | $20,972 | $15,251 | $35,010 | $20,969 | $8,086 | $36,910 | $12,739 | $64,509 |
| TransNet - Transit | $42 | $42 | $42 | $42 | $42 | $42 |
| Local Funds | $180 | $180 | $180 | $180 | $180 | $180 |
| **TOTAL** | $231,016 | $18,205 | $27,495 | $115,251 | $41,010 | $20,969 | $8,086 | $47,768 | $12,739 | $170,509 |

**PROJECT LAST AMENDED 10-13**

| IM | $975 | $975 | $975 | $975 | $975 |
| RSTP | $15,661 | $4,113 | $5,548 | $6,000 | $9,661 | $6,000 |
| Prop 1B - CMIA | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 | $100,000 |
| TransNet - MC | $114,158 | $13,870 | $20,972 | $15,251 | $35,010 | $20,969 | $8,086 | $36,910 | $12,739 | $64,509 |
| TransNet - Transit | $42 | $42 | $42 | $42 | $42 | $42 |
| Local Funds | $180 | $180 | $180 | $180 | $180 | $180 |
| **TOTAL** | $231,016 | $18,205 | $27,495 | $121,251 | $41,010 | $20,969 | $8,086 | $47,768 | $12,739 | $170,509 |

Wednesday, May 9, 2012
### Project Title:
Grouped Projects for Highway Safety Improvement - HSIP Program

### Project Description:
Projects are consistent with 40 CFR Parts 93.126 and 93.127 Exempt Tables 2 and 3 categories - railroad/highway crossing, safer non-federal-aid system roads, shoulder improvements, traffic control devices and operating assistance other than signalization projects, intersection signalization projects at individual intersections, pavement marking demonstration, truck climbing lanes outside the urbanized area, lighting improvements, emergency truck pullovers

### Change Reason:
Increase funding

### Capacity Status: NCI

### Exempt Category: Safety - Safety Improvement Program

### Est Total Cost: $16,239

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### Project Last Amended: 10-09

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Wednesday, May 9, 2012
North County Transit District

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**Est Total Cost:** $181,692

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**PROJECT LAST AMENDED 10-17**

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Wednesday, May 9, 2012
### San Diego Association of Governments

#### MPO ID: SAN58  
**RTIP #:10-18**

- **Project Title:** Grouped Projects for Operating Assistance - FTA Section 5317 New Freedom Program
- **Project Description:** Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories: operating assistance to transit operators - non profit agencies providing transit service to elderly and disabled residents
- **Change Reason:** Reduce funding
- **Capacity Status:** NCI  
- **Exempt Category:** Mass Transit - Transit operating assistance

**Est Total Cost:** $3,311

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**PROJECT LAST AMENDED 10-17**

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#### MPO ID: SAN73  
**RTIP #:10-18**

- **Project Title:** San Elijo Lagoon (Cardiff to Craven) Double Track  
- **SANDAG ID:** 1239806
- **Project Description:** From MP 240.4 to MP 240.7 - design double track for Coastal Rail  
- Corridor from CP Cardiff to CP Craven across San Elijo Lagoon - does not add additional transit service
- **Change Reason:** Increase funding
- **Capacity Status:** NCI  
- **Exempt Category:** Mass Transit - Track rehabilitation in existing right of way

**Est Total Cost:** $76,700

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* project completion outside of this RTIP cycle

**PROJECT LAST AMENDED 10-09**

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### San Diego Association of Governments

**MPO ID: SAN97**  
**Project Title:** Grouped Projects for Operating Assistance - FTA Section 5316 JARC Program  
**Project Description:** Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories: operating assistance to transit operators - operating assistance to transit agencies  
**Change Reason:** Increase funding  
**Capacity Status:** NCI  
**Exempt Category:** Mass Transit - Transit operating assistance  
**Est Total Cost:** $342

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**MPO ID: SAN179**  
**Project Title:** Grouped Projects for Capital Purchases through FTA Section 5317 New Freedom Program  
**Project Description:** Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories: purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet - purchase of vehicles and various capital equipment for the provision of transit service  
**Change Reason:** Combine like projects to create lump sum  
**Capacity Status:** NCI  
**Exempt Category:** Mass Transit - Transit operating assistance  
**Est Total Cost:** $696

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Wednesday, May 9, 2012
### San Diego Metropolitan Transit System

**MPO ID:** MTS33A  
**RTIP #:** 10-18

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**Est Total Cost:** $3,470

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**PROJECT LAST AMENDED 10-17**

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### MPO ID: MTS43

**RTIP #:** 10-18

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<td>Funding will support routes 30, 932, 955, 929, 967, 968, 905 and 960 - transit operating assistance to fund transportation plan to mitigate transit service deficiencies identified in the Welfare-to-Work transit study and the San Diego regional transportation plan</td>
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**Est Total Cost:** $8,580

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**PROJECT LAST AMENDED 10-17**

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**San Diego Region (in $000s)**

**MPO ID:** SD70  
**RTIP #:** 10-18

**Project Title:** West Mission Bay Drive Bridge  
**Project Description:** West Mission Bay Drive bridge over San Diego River - in San Diego, replace bridge and increase from 4 to 6-lane bridge including Class II bike lane (52-643)

**Est Total Cost:** $120,100  
**Open to Traffic:** Dec 2015

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<tr>
<td>TransNet - LSI</td>
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**PROJECT LAST AMENDED 10-09**

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Wednesday, May 9, 2012
San Marcos, City of

**MPO ID:** SM32

**Project Title:** Via Vera Cruz Bridge and Street Improvements

**Project Description:** From San Marcos Boulevard to Discovery Street - widen to four lane secondary arterial and construct a bridge at San Marcos Creek

**Change Reason:** Revise funding between fiscal years

**Capacity Status:** CI

**Exempt Category:** Non-Exempt

**Open to Traffic:** Dec 2017

**Est Total Cost:** $13,457

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* An additional $11.4M is programmed outside of the RTIP cycle

**PROJECT LAST AMENDED 10-14**

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Various Agencies

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<td>Project Title: State Route 11</td>
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</tr>
<tr>
<td>Project Description: From Border of Mexico east of SR 905/Otay Mesa Border Crossing to future SR 125/905 junction - Construction of four-lane toll highway facility, CVEF and POE in three segments: Segment 1: SR-11 from Britannia Blvd. to Enrico fermi; Segment 2: SR-11 from Enrico fermi to Siempre Viva; Segment 3: POE from Sempre Viva to Mexico Border; Segment 1 is fully funded through Construction phase. Toll Credits of $3,213 will be used to match FY12 federal funds for the PE phase, Toll Credits of $4,366 will be used to match FY12 federal funds for the ROW phase, Toll Credits of $194 will be used to match FY13 federal funds for the CON phase.</td>
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<td>Change Reason: Revise Fund Source, Revise project description</td>
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PROJECT LAST AMENDED 10-15

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Wednesday, May 9, 2012
# 2010 Regional Transportation Improvement Program
## Amendment No. 18
### San Diego Region (in $000s)

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<td>FTA Section 5311</td>
<td>Federal Transit Administration Rural Program</td>
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<tr>
<td>FTA Section 5316 (JARC)</td>
<td>Federal Transit Administration Jobs Access and Reverse Commute</td>
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<td>FTA Section 5317 (NF)</td>
<td>Federal Transit Administration New Freedom</td>
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<td>HBP</td>
<td>Highway Bridge Program under SAFETEA-LU</td>
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<td>HBRR</td>
<td>Highway Bridge Repair and Rehabilitation under TEA-21</td>
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<td>HPP</td>
<td>High Priority Program under SAFETEA-LU</td>
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<td>HSIP</td>
<td>Highway Safety Improvement Program</td>
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<td>Interstate Maintenance Discretionary</td>
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<td>NHS</td>
<td>National Highway System (administered by Caltrans)</td>
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<td>RSTP</td>
<td>Regional Surface Transportation Program</td>
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<td>TE</td>
<td>Transportation Enhancement Program</td>
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<tr>
<td>CMAQ/RSTP Conversion</td>
<td>Reimbursement of advanced federal funds which have been advanced with local funds in earlier years</td>
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<td><strong>State Funding</strong></td>
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<td>CMIA</td>
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<td>LBSRA</td>
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<td>Transportation Systems Management</td>
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<td>Local Funds - Advanced Construction; mechanism to advance local funds to be reimbursed at a later fiscal year with federal/state funds</td>
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<td>TransNet - L funds which agencies have received payment, but have not spent</td>
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<td>TransNet-LSG</td>
<td>Prop. A Extension Local Transportation Sales Tax - Local Smart Growth</td>
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<td>TransNet-LSI</td>
<td>Prop. A Extension Local Transportation Sales Tax - Local System Improvements</td>
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<td>TransNet-LSI Carry Over</td>
<td>TransNet - LSI funds previously programmed but not requested/paid in year of allocation</td>
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<td>TransNet-LSI (Cash)</td>
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<td>TransNet-MC</td>
<td>Prop. A Extension Local Transportation Sales Tax - Major Corridors</td>
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<tr>
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STATE ROUTE 78 CORRIDOR STUDY REPORT

**Introduction**

In 2009, SANDAG was awarded a Caltrans Planning Partnership Grant to fund the examination of the feasibility of toll and other non-toll alternatives to address future regional and local travel demand within the regionally significant State Route 78 (SR 78) corridor, with the grant match provided by the City of San Marcos. Therefore, SANDAG, in collaboration with Caltrans, local jurisdictions, and other key stakeholders, has explored the feasibility of adding Managed Lanes, Toll Lanes, and other non-toll congestion management alternatives to SR 78 to address regional and local travel demand within the corridor. The SR 78 Corridor Study (Attachment 1) explored issues related to right-of-way constraints and operations including interchanges with Interstates 5 and 15 (I-5 and I-15). The Study evaluated the effectiveness of Managed Lanes for improving corridor mobility, estimated revenues that could be collected through user fees for new toll lanes, and identified potential implementation strategies. On March 2, 2012, the Transportation Committee received information on the alternatives evaluated, toll lane financial analysis, preliminary highway geometrics and cost estimate, and scheduled public outreach efforts. This report presents information on the public comments received, and highlights recommendations of the Study, including potential implementation strategies.

**Discussion**

**Study Background**

SR 78 serves as the primary east-west travel corridor between Escondido and Oceanside, traversing through the cities of Carlsbad, Vista, and San Marcos, as well as unincorporated areas of San Diego County. SR 78 serves as the primary facilitator of local and regional travel in North County between these local jurisdictions and provides north-south connections to I-5 and I-15. The corridor currently experiences significant levels of congestion during the peak period, most significantly on the eastern and western ends.

A technical working group met periodically to provide input on various aspects of the study. The working group included staff from the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, County of San Diego, California State University San Marcos, Mira Costa College, North County Economic Development Council, North County Transit District, Palomar College, Pomerado Hospital, the Southern California Tribal Chairmen’s Association, Caltrans, and SANDAG.

**Recommendation**

The Transportation Committee is asked to accept the State Route 78 Corridor Study and its findings and to provide them to Caltrans for consideration in the project initiation document process.
Study Purpose and Need

The cities within the SR 78 corridor have experienced significant population, employment and retail development over the past 15 years and the existing freeway facilities face significant congestion. The SR 78 corridor contains constrained right-of-way and topography which provides challenges for network expansion. The 2050 Regional Transportation Plan (RTP) includes the addition of two Managed Lanes (one eastbound, one westbound), operational improvements to SR 78, and high-occupancy vehicle (HOV) connectors from I-15 to SR 78 in 2020, HOV and freeway connectors from I-5 to SR 78 are included in 2035. The 2050 RTP also includes double tracking of the SPRINTER, extension of the SPRINTER to South Escondido, SPRINTER Express Service, a new San Marcos Shuttle, and rapid and local bus service. This Study explored opportunities to provide for greater corridor mobility and examined the potential of toll revenues to assist in advancing the implementation of new toll lanes or helping close funding gaps.

Alternatives Evaluated

The Study examined two alternatives. Alternative 1 analyzed the addition of two new Managed Lanes, one eastbound and one westbound, as per the 2050 RTP, where carpools and transit would access the lanes for free. Solo drivers who pay a fee also could access the Managed Lanes. Alternative 2 included the new lanes as Toll Lanes, where all drivers, with the exception of transit vehicles, would pay for access. If toll lanes were to be implemented, an amendment to the TransNet Ordinance potentially would be required. Both alternatives also included auxiliary lane improvements, and transit and connector projects consistent with the 2050 RTP. Additional transit serving California State University San Marcos, MiraCosta College, and Palomar College also was considered.

Public Outreach

SANDAG, in collaboration with Caltrans and local jurisdictions along the SR 78 corridor, held two evening public outreach open house meetings on March 14, 2012, at the City of San Marcos, Valley of Discovery Room and, on March 15, 2012, at the El Corazon Senior Center in Oceanside. Meeting materials were available in English and Spanish and Spanish speaking staff attended both outreach meetings. The meetings were advertised in the North County Times, on local jurisdiction and agency websites and calendars, and via email distribution.

Information about the Study and an online comment tool were located on the SANDAG Web site www.sandag.org/sr78study. Articles providing information on the Study and open houses were published in the Daily Transcript, North County Times, and Union Tribune. The North County Times and NBC Channel 7 also provided coverage of the workshop held in San Marcos.

Presentations on the Study were also made to the Interagency Working Group on Tribal Transportation Issues, the San Diego North Economic Development Corporation Public Policy Committee, and the Vista Chamber of Commerce Government Affairs Committee.

Forty-eight public comments were received and are detailed in Appendix D of the Study report (Attachment 1). The public comments contained a number of statements of support for a Managed Lanes facility on SR 78, concerns regarding specific on\off-ramps or freeway locations, interest in additional general purposes lanes or no build alternatives, the need for freeway connectors/HOV
connectors at I-5/SR 78 and I-15/ SR 78, and concerns about future construction being managed effectively and minimizing impacts to historic structures. The cities of Oceanside and Vista also submitted comments regarding the need to coordinate improvements to SR 78 with adjacent arterial and local interchange projects.

**Implementation Strategy**

**Project Delivery Methods**

As the project moves through the development process, project delivery methods will be considered and selected. Design-Bid-Build, Design Build, Construction Management/General Contracting (CMGC), and Design Sequencing are project delivery methods that can be deployed on highway projects, each offering their own benefits and challenges. Design-Bid-Build and Design Sequencing have been utilized in the delivery of past and current Caltrans projects. Design Build and CMGC would require legislation in order to be utilized. Legislation has authorized a limited number of Design-Build projects under a pilot program which requires California Transportation Commission authorization and sunsets January 1, 2014. As the number of projects allowed under the program is limited, and the Final Design phase of SR 78 will not likely start by 2014, the potential to use the Design-Build strategy is unclear. CMGC is not a delivery method that is currently being utilized on Caltrans projects; however, both SANDAG and Caltrans have legislation pending that may make it feasible to consider this method at the appropriate time in the SR 78 project development process. These methods are described in detail on pages 48-50 of the Draft Study report.

**Project Phasing**

The SANDAG 2050 RTP includes the implementation of Managed Lanes on SR 78 from I-5 to I-15 by 2020. Phased implementation was not explored during the 2050 RTP development process but will be evaluated in future project development stages. If full project funding were not available at once, phasing could allow for some elements or segments to be advanced with partial funding.

A variety of phasing strategies could be implemented on the corridor including phasing by segment, by type of improvement, or a hybrid approach, as described below. The approach utilized in the corridor will depend on traffic analysis, constructability and potential funding.

**Phasing by Segment**

If the project were phased by segment, one geographical segment of the project would be constructed in advance of other areas in the corridor. This newly finished segment would then be opened while other pieces of the corridor would be undergoing construction. Phasing could be staged rapidly, with the next segment under construction before the previous is open, or spaced out, with breaks in corridor construction between phases. The number and length of phases would vary based on available funding, constructability review, and potential benefit to corridor congestion. This approach is currently being utilized in the region on SR 76.

In order to identify what segment of SR 78 would be the best candidate for earlier construction, current and projected traffic data were analyzed. This analysis showed that the highest volumes occur at Barham Drive and the portions of SR 78 adjacent to I-15.
Based on the 2011 and projected 2020 traffic volumes, potential SR 78 segments for phased construction are listed in order below:

1. I-15 to San Marcos Boulevard
2. San Marcos Boulevard to Melrose Drive
3. Melrose Drive to I-5

The segment from I-15 to San Marcos Boulevard would be a good candidate for early construction because opening this segment for operation would address the higher level of congestion close to the I-15 first and would expand the Managed Lanes network earlier, connecting to the I-15/SR 78 HOV Connectors included in the 2020 phase of the 2050 RTP and the existing I-15 Managed Lanes. The San Marcos Boulevard to Melrose segment would be constructed next, and the Melrose to I-5 segment would be constructed last, which would eventually connect to the I-5/SR 78 HOV and freeway connectors included in the 2035 phase of the 2050 RTP.

If the phasing of the I-5 Managed Lanes and connectors were revised in future RTPs, it could make sense to phase the eastern and western ends of the corridor first with the final phase connecting the two in the middle. However, with current RTP phasing this is not feasible as new SR 78 lanes would not have a direct connection to I-5.

**Phasing of Improvement Type**

As the 2050 RTP includes planned operational improvements for SR 78, another potential strategy is to build auxiliary lanes and implement operational improvements before building the Managed or Tolled Lanes. This would allow for targeted congestion relief while postponing larger potential right-of-way and sensitive environment impacts. In segments of the highway where auxiliary lanes are planned, the auxiliary lane could be added with a limited increase in the cross-section, and assist in providing near-term congestion relief. The final build out would further expand the cross-section and the General Purpose Lanes would be shifted outward to accommodate the Managed or Tolled Lane and buffer. The former Auxiliary Lane would become a General Purpose Lane and a new Auxiliary Lane would need to be constructed.

**Hybrid Approach**

A hybrid approach would include the phasing of some parts of the corridor by segment and others by improvement type. A blended approach may best meet constructability, impact minimization and financing requirements. This approach is what is currently being planned for the I-5 North Coast Corridor Managed Lanes project.

The appropriate project delivery method and project phasing will be explored and defined in future stages of the project development process.

**Study Recommendation**

The Study evaluated the feasibility and potential benefits of Managed Lanes and Toll Lane alternatives for the SR 78 corridor. The results of the Study indicate that a Managed Lane alternative offers the most benefit to the corridor and the region. This conclusion is supported by three main areas of analysis that led to the recommendation of this preferred alternative - performance, financial feasibility, and public input. The evaluation of the two alternatives using
screening criteria consistent with the 2050 RTP evaluation criteria indicated that the Managed Lanes alternative scored higher than the Toll Lane alternative, considering a variety of mobility, environmental, and cost criteria. The financial feasibility analysis found that revenue from Toll Lanes would provide only a marginal funding contribution to construction, and it is unlikely that Toll Lane alternative would provide significant funds for project implementation in the face of a funding shortfall. In addition, comments received through public outreach efforts indicate a stronger preference for Managed Lanes over Toll Lanes. Therefore, the results of this Study lead to a recommendation to advance the development of the Managed Lanes on SR 78 as defined in the 2050 RTP.

**Next Steps**

Subject to the Transportation Committee action, staff will provide the final SR 78 Corridor Study Report and support documents to Caltrans for consideration in the next project implementation stage, which is the preparation of a Project Study Report (PSR). Funds for a PSR for SR 78 between I-5 and I-15 and a PSR/PDS for the I-15/SR 78 HOV connectors are included in the SANDAG Draft FY 2013 Budget, which is scheduled to be presented to the Board of Directors for adoption in June 2012.

CHARLES “MUGGS” STOLL  
Director of Land Use and Transportation Planning

Attachment: 1. Draft State Route 78 Corridor Study, May 2012

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STATE ROUTE 78 CORRIDOR STUDY

MAY 2012

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EXECUTIVE SUMMARY

The State Route (SR) 78 Corridor Study conceptually examined the feasibility of adding either a Managed or a Tolled Lane in each direction to SR 78, between Interstate 5 (I-5) and I-15, in order to address regional and local travel demand within the corridor. The study evaluated preliminary right-of-way needs and environmental constraints as well as the potential for improvements to address corridor mobility issues. In addition, the study estimated toll revenues as a potential means for project financing and evaluated preliminary implementation strategies. SANDAG pursued this work through a Caltrans Planning Partnership Grant with the grant match provided by the City of San Marcos. The development of the study utilized a Technical Working Group (TWG) to incorporate input from key stakeholders, including the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, County of San Diego, California Department of Transportation (Caltrans), North County Transit District (NCTD), San Diego Association of Governments (SANDAG), and other major corridor stakeholders.

SR 78 is located in the North County region of San Diego County and traverses the Cities of Oceanside, Carlsbad, Vista, San Marcos, and Escondido, as well as unincorporated areas of San Diego County. SR 78 is the primary east-west freeway connection in North County and is the primary facilitator of local and regional travel, with few parallel alternative roadways. It also provides north-south connections to Interstates 5 and 15.

Along the SR 78 Corridor, there has been considerable growth in population, employment and retail activities over the past 15 years which has resulted in increased congestion on SR 78 and these trends are expected to continue in the future. In addition, there are a number of other major travel generators along the corridor, such as universities, hospitals, local and regional shopping, and recreational activities. This growth has led to increasing delays in the corridor including the San Diego region’s worst bottleneck at Barham Drive in San Marcos for the past three years.

In October 2011, SANDAG adopted the 2050 Regional Transportation Plan (RTP), which includes the addition of two Managed Lanes on SR 78 (one eastbound and one westbound), the I-15/SR 78 High Occupancy Vehicle (HOV) connector built by the year 2020, and the I-5/SR 78 HOV and freeway connectors built by 2035. Because the project performed well under the 2050 RTP performance evaluation criteria, the planned delivery of the SR 78 Project was advanced compared to the previous RTP (SANDAG, 2011).

Based on the adopted 2050 RTP, the study area focused on the SR 78 facility between I-5 and I-15. The study analyzed two build alternatives which both included the addition of one eastbound and one westbound lane to SR 78, auxiliary lane improvements, and transit and connector projects consistent with the 2050 RTP. In one alternative, the new lanes were analyzed as Managed Lanes as per the 2050 RTP, where carpools and transit would access the lane for free. Solo drivers could access the lanes by paying a toll. In the other alternative, the new lanes were analyzed as Tolled Lanes where all
drivers would pay for access. The Managed and Tolled Lanes alternatives would have nearly the same physical improvements with the main difference being which vehicle types would be required to pay a toll for lane access. These alternatives were evaluated against two no build alternatives. One no build alternative included only those projects included in the 2010 SANDAG RTIP. The other included projects in the 2050 SANDAG RTP with the exception of the SR 78 widening and connectors to I-5 and I-15.

Using data from the SANDAG regional travel demand model, an econometric model that facilitates rapid simulation of toll policy and network alternatives, provided projected traffic conditions on the Managed, Tolled, and General Purpose (GP) Lanes under different pricing strategies. The alternative operating objectives or pricing strategies provide bookends for the range of strategies that could be implemented. The objectives were:

- Toll Revenue Maximization – this scenario has a goal of maximizing the revenue produced by the Managed or Tolled Lanes facility.
- Mobility Optimization – the goal of this scenario is to minimize aggregate travel time cost for all users across both the GP and Managed or Tolled Lanes.

These differences in operating objectives resulted in significant differences in how the corridor would perform, as discussed in Section 3.0 – Traffic Analysis.

The study included a conceptual engineering review to define an initial project footprint, initial design exceptions, potential right-of-way impacts, and a high-level cost estimate. The project footprint was developed by applying the standard Caltrans freeway cross section to the length of the project. Interchange configurations were not designed at this project phase and therefore are not included in the project footprint. Where there would be substantial impacts to existing structures and facilities, key design exemptions from the Caltrans Highway Design Manual (HDM) (Caltrans, 2011) were identified and included in the project footprint. Once this footprint was established, potential adjustments to the existing centerline were evaluated in order to reduce right-of-way and environmental impacts. A preliminary rough order of magnitude capital cost estimate was developed for the project based on the engineering review. Based on the preliminary analysis, the project is estimated to cost between $917 and $1,109 million (in 2011 dollars). The study also reviewed potential environmental constraints and identified potential anticipated environmental approvals, technical studies, and permits that may be needed for the project.

Screening criteria consistent with the 2050 RTP were developed with the TWG. Using the results of the traffic analysis, engineering review, and environmental analysis, the TWG evaluated the alternatives against these screening criteria. The screening criteria included the following:

- Travel Times
- Arterial Level of Service
- Safety
- Improvement to Transit and HOV Mobility
- Study Area Mode Shares
The Managed and Tolled Lanes alternatives were evaluated against each other by comparing their performance to the no build alternatives. Based on this screening criteria analysis, the Managed Lanes alternative under the Mobility Optimization scenario performed the best. However, the differences in performance among the alternatives were not substantial; thus pricing for a future facility could fall between the Mobility Optimization and Revenue Maximization strategies.

The same toll modeling that was used for the traffic analysis was used to better understand potential revenues that could be generated through the implementation of Tolled Lanes. If toll revenues were significant, they could be part of a potential project capital funding strategy in the case that anticipated federal and state construction funds were not available. Revenues were forecasted based on modeled corridor volumes and tolls with deductions taken based on anticipated corridor operations and maintenance costs. However, only the Revenue Maximization objective with a higher value of time assumption resulted in a potential funding contribution from Tolled Lane revenues and in that case the capital contribution would be marginal.

The SR 78 Corridor Study is an initial step in implementing the SR 78 Corridor Project. The project development process contains many phases which will follow the completion of this study. These stages will expand upon the conceptual engineering and impacts analysis done for this study. As part of this process, methods for project delivery and potential project phasing will be considered. Potential project delivery methods include the traditional Design-Bid-Build, Design-Build, Construction Management/General Contracting, and Design Sequencing. Project phasing could provide many benefits and could be phased either by segment or by type of improvement. It is possible that project phasing would occur from east to west to allow for connection to the I-15 Express Lanes and planned connector facility.

As part of the Corridor Study efforts, SANDAG led public outreach efforts in order to gather input about how corridor development should be framed. This included two open house style public meetings, presentations to a variety of stakeholder groups, and a public comment period. A range of comments were received containing a mix of support and opposition to the proposed project alternative concepts.

Based on the analysis of the alternatives and the alternatives screening, the Managed Lanes alternative is favored. Financial analysis indicated that the Tolled Lane alternative is unlikely to provide sufficient revenues to close a capital funding gap. Additionally, public input in general was not supportive of Tolled Lanes. Therefore, it is recommended that plans for the corridor remain consistent with the 2050 RTP and that one Managed Lane in each direction be implemented along with planned auxiliary lanes and transit enhancements.
1.0 PURPOSE AND BACKGROUND

1.1 Purpose and Introduction

The State Route (SR) 78 Corridor Study conceptually examined the feasibility of adding either a Managed or a Tolled Lane in each direction to SR 78, between Interstate 5 (I-5) and I-15, in order to address regional and local travel demand within the corridor. The study involved representatives of the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, County of San Diego, California Department of Transportation (Caltrans), North County Transit District (NCTD), San Diego Association of Governments (SANDAG), and other key stakeholders through a Technical Working Group (TWG) which provided input throughout the development of the study. A complete list of Technical Working Group participants is included on the acknowledgements page of this document.

In this report, the background and impetus for the project are discussed in this section, Purpose and Background. The rest of the report includes the following information:

- Section 2.0 - Definition of Alternatives, provides details on the build and no build alternatives analyzed. Based on the definition of alternatives, several analyses were conducted to evaluate the alternatives’ performance.
- Section 3.0 - Traffic Analysis, discusses the methodology used to estimate traffic impacts for the defined alternatives and forecasts revenue for the build alternatives.
- Section 4.0 - Engineering Feasibility, discusses the methodology used to estimate the high-level project footprint, right-of-way and environmental impacts, and to identify design exceptions.
- Section 5.0 - Planning Level Capital Cost Estimate, details the estimated capital, operations, and maintenance costs for the build alternatives based on the engineering review.
- Section 6.0 - Environmental Constraints, discusses potential environmental impacts and identifies the likely required environmental studies and permits.
- Section 7.0 - Alternatives Evaluation, synthesizes the results of the various traffic, financial, engineering, and environmental analyses and evaluates the alternatives using screening criteria developed by the TWG.
- Section 8.0 - Financial Feasibility analyzes the financial feasibility of the alternatives, detailing the methodology, assumptions, and results of the analysis.
- Section 9.0 - Implementation, discusses the project development process and potential project delivery methods and phasing strategies.
- Section 10.0 - Public Outreach, describes the public outreach efforts that were undertaken and comments that were gathered.
- Section 11.0 – Conclusion recommends an alternative for further study.
1.2 Background and Problem Statement

The SR 78 Corridor is located in the North County region of San Diego County and traverses the Cities of Oceanside, Carlsbad, Vista, San Marcos, and Escondido, as well as unincorporated areas of San Diego County. SR 78 is the only east-west freeway connection in North County and is a regionally significant transportation facility, with few alternative parallel roadways.

The SR 78 Corridor serves as the primary facility for local and regional east-west travel in North County. The study area is approximately 17 miles in length, and the SR 78 roadway is generally comprised of three traffic lanes in each direction, with auxiliary lanes at certain locations to facilitate traffic entering and exiting at interchanges. The corridor serves interregional travel among the Counties of Riverside, Orange, and San Diego. In San Diego County, the corridor facilitates trips to and from multiple East County destinations as well as providing an essential east-west link for those traveling through the corridor. In addition, the highway accommodates shorter, more local trips that would typically be served by a network of arterial streets. However, there are few other continuous, east-west roadways within the corridor, particularly in the east end of the corridor.

1.2.1 History of SR 78 Corridor Study

In 2009, SANDAG was awarded a Caltrans Planning Partnership Grant to fund the examination of the feasibility of toll and other non-toll alternatives to address future regional and local travel demand within this regionally significant corridor, with the grant match provided by the City of San Marcos. Because of changes in the region’s transportation investment priorities, the approach of the SR 78 Corridor Study has evolved over the course of the study. The SANDAG 2030 Regional Transportation Plan (RTP) included two High-Occupancy Vehicle (HOV) lanes on SR 78 with connections to I-15 and I-5 to be built by 2030 in its Reasonably Expected Revenue Scenario (SANDAG, 2007). HOV lanes, also known as carpool lanes, require vehicles to carry a minimum number of people, which is usually two people, but in some cases three people. Initially, three study alternatives were identified: an HOV lane alternative as defined in the 2030 RTP; a Managed Lanes alternative; and a Transportation Demand and System Management alternative that would include auxiliary lanes, ramp improvements, and additional transit service. Managed Lanes, also known as Express Lanes, allow high-occupancy vehicles to travel for free and allow solo drivers to pay to use the lanes. One of the goals of the study was to consider how implementation of congestion-reducing corridor improvements could be advanced before 2030, potentially through alternative revenue sources.

The SANDAG 2050 RTP used evaluation criteria, such as mobility, congestion relief, number of person trips within one mile, and job accessibility, to evaluate and rank projects. Because SR 78 scored well on these particular criteria, the planned delivery of the SR 78 project was moved forward in the SANDAG 2050 RTP which was adopted in October 2011. The 2050 RTP includes two Managed Lanes (instead of HOV) on SR 78 as part of a larger planned network of Managed Lanes. The 2050 RTP also includes an
I-15/SR 78 HOV connector built by the year 2020 and I-5/SR 78 HOV and freeway connectors built by 2035. As a result, the focus of this study shifted to include evaluating the revenue capacity of alternatives more closely aligned with the 2050 RTP. Instead of evaluating three alternatives, the analysis focused on evaluating a Managed Lanes alternative and a Tolled Lanes alternative against two baseline scenarios, which is discussed further in Section 2.0 - Definition of Alternatives.

1.2.2 Existing and Forecasted Corridor Conditions

Congestion and delay currently occur on portions of SR 78 during the peak periods and are expected to worsen as additional users utilize the corridor in the future. In 2011, average daily corridor traffic ranged from 124,000 at the western end near I-5 to 162,000 at the eastern approach toward I-15 (Caltrans Performance Measurement System (PeMS), 2012). By 2050, the average daily traffic is projected to grow approximately 35 percent to 168,000 near I-5 and approximately 10 percent to 178,000 near I-15 (SANDAG, 2011).

It is predicted that the future level of service will only worsen as pronounced and sustained congestion is projected for a greater duration throughout the corridor. Local jurisdictions along the corridor have experienced robust population and employment growth over the past decade. In particular, the City of San Marcos experienced greater than 50 percent growth in population from 54,977 residents in 2000 to 83,781 residents in 2010 (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010), which has increased average daily traffic (ADT) in the project area. The cities and unincorporated County within the SR 78 Corridor are projected to experience continued growth in population, employment, housing, retail, and commercial activities through the 2050 RTP horizon year.

The existing peak hour level of service (LOS) ranges throughout the corridor from LOS A to LOS F. The LOS is generally worse towards the eastern and western ends of the study corridor. In the western end of the corridor, the LOS was generally unacceptable (LOS E or F) in the eastbound and westbound directions during the PM peak. In the eastern end of the corridor, both eastbound and westbound travelers experienced either LOS E or F in the AM and PM peak hours (Caltrans PeMS, 2012).

Operations in the eastern end of the SR 78 corridor are more congested during both the morning and evening peak periods. Vehicles headed in the eastbound direction in the PM peak period (3 to 6 PM), from roughly Rancho Santa Fe Road to the I-15, regularly experience reduced travel speeds and congested traffic conditions. In 2011, SR 78 eastbound travel at Barham Drive had an average daily vehicle hours of delay of 1,449 hours during the afternoon peak period on weekdays (Caltrans PeMS, 2012), making it the worst bottleneck in San Diego County for the past three years.

The westbound direction of SR 78 in San Marcos experiences more congestion approaching the Nordahl Road interchange, with traffic backing up on both the northbound I-15 flyover ramp and the southbound I-15 exit ramp to westbound SR 78, resulting in traffic queues on I-15 (Caltrans, 2010). Westbound auxiliary lanes from I-15 to Nordahl were completed in January 2012 and improvements to the Nordahl Bridge
The west end of the corridor experiences congestion at the I-5 interchange, particularly for the westbound SR 78 to southbound I-5 movement that is controlled by a traffic signal. The westbound traffic queues onto the SR 78 freeway lanes as it approaches the I-5 interchange. While the west end of the corridor experiences congestion related to the interchange with I-5, it is not as extensive as congestion found in the San Marcos and Escondido area of the corridor. The west end of the corridor has relatively continuous east-west arterial streets both north and south of SR 78, which provide a broader roadway network and alternative route options for short trip drivers.

1.2.3 Existing Physical Characteristics

The project area is represented by suburban characteristics, but it also contains existing and planned Smart Growth place types. Residential land uses include single- and multi-family units, as well as mobile home parks and group quarters facilities such as student housing. The corridor contains a variety of employment and activity centers including shopping centers, retail/commercial, hotels/motels, low-rise office, healthcare, education, government, and industrial, which are directly adjacent to the SR 78 Corridor. California State University, San Marcos (CSUSM) and Palomar College are major educational institutions situated directly adjacent to SR 78. The SPRINTER rail line offers public transit services parallel to SR 78 with seven-day service and a 53-minute ride between Escondido and Oceanside. Supporting the SPRINTER and providing local distribution to and from stations are two local bus routes (305 and 318) which parallel the rail line, north-south local bus routes serving various stations, and shuttle routes linking colleges to the closest SPRINTER Station. Currently there are no bus routes traveling on SR 78.

The topography and geographic characteristics within the project area influence the feasibility of potential alternatives. The SR 78 Corridor runs through canyons and various elevations yielding significant slopes and a constrained right-of-way. Parcels adjacent to the freeway have been developed and frontage roads run parallel to SR 78 for much of its length. As a result, future transportation development of the SR 78 facility is limited. Due to the constrained right-of-way and topography, improvements to SR 78 are challenging and costly. However, both the public and local jurisdictions have expressed concerns over existing and future congestion within the corridor.

1.2.4 Other Corridor Projects

While the SR 78 Corridor Study examines the potential for adding Managed or Tolled Lanes to SR 78, other projects are currently underway in the corridor to improve mobility.
As an interim step towards full double tracking, NCTD is currently identifying the additional double tracked segments of the SPRINTER line necessary to permit a 20-minute service frequency prior to 2020. The NCTD Mobility Plan which comprehensively restructured the bus network is implementing shuttles linking California State University, San Marcos; Palomar College; and MiraCosta College to SPRINTER stations.

Caltrans, SANDAG, and the cities of San Marcos and Escondido have partnered to implement improvements in the vicinity of Nordahl Road. In January 2012, a new westbound auxiliary lane from I-15 to Nordahl Road opened. Construction began around the same time to add auxiliary lanes to eastbound SR 78 – one lane between Woodland Parkway and Barham Drive and two lanes between Barham Drive and Nordahl Road. This work is anticipated to be completed in early 2013. Replacement of the Nordahl Road Bridge also is currently underway with completion scheduled for fall 2012. The new bridge will include dedicated turn lanes and reconfigured ramps and will be lengthened to accommodate future SR 78 widening.

The City of San Marcos is working on other improvements to the SR 78 Corridor within their jurisdiction. Permitting and mitigation for the future widening of SR 78 between San Marcos Boulevard and Twin Oaks Valley Road are currently being pursued. This work includes the addition of Managed or Tolled Lanes, modification of existing ramps, and a new bridge at San Marcos Creek. Preliminary design is complete and environmental permits for this work are scheduled to be issued in fall 2012. Design of a new Woodland Parkway interchange has progressed to 60% and the environmental permitting has been completed. The new interchange will include ramp modifications and bridge lengthening to accommodate a wider SR 78 footprint.

The City of Vista is in the environmental clearance and design stages to widen West Vista Way from its current substandard design to a 4-lane road in accordance with the City’s adopted Circulation Element. West Vista Way is a major arterial and SR 78 frontage road. At this point, the City is proceeding only with preliminary engineering, final design and environmental documentation of the project in part due to uncertainty with the design of the adjacent SR 78 Corridor. The City has programmed local funds to construct the first phase of the project between Emerald Drive and Grapevine Road.

As part of ongoing work to design and permit the Interstate 5 North Coast Corridor project, Caltrans is developing alternatives for the I-5 and SR 78 connectors. A Project Study Report is in progress and will be available for review by corridor jurisdictions in the summer of 2012.
2.0 DEFINITION OF ALTERNATIVES

2.1 Study Area

The corridor study area focuses on the SR 78 facility between I-5 and I-15, extending one intersection north and south of SR 78 at each interchange (Figure 1). For modeling purposes, the study area includes Traffic Analysis Zones that are within or partially within a 2-mile buffer of the facility. This modeling study area was used to analyze the impacts of different alternatives on broader travel mode shares and arterial level of service.

Figure 1: SR 78 Corridor Study Area

2.2 Baseline and Build Alternatives

Based on the adopted 2050 RTP which includes Managed Lanes on SR 78, two build alternatives were developed and analyzed: one Managed Lane in each direction on SR 78 and one Tolled Lane in each direction on SR 78. Corridor operational improvements were included with these build alternatives. Additionally, two baseline alternatives were developed to analyze the impact of the build alternatives against a no build approach. All build and baseline alternatives were analyzed for the years 2020, 2035, and 2050. The details and phasing of each of the alternatives are described below, summarized in Table 4, and mapped in Appendix A.

Baseline A - No Build and 2010 Regional Transportation Improvement Program

Baseline A includes only those short-range projects already programmed in the SANDAG 2010 Regional Transportation Improvement Program (RTIP). Any other transportation improvements planned for the corridor are not included in Baseline A.
Baseline B - 2050 RTP without SR 78

Baseline B includes long-range regional investments from the SANDAG 2050 RTP, including operational improvements on SR 78, with the exception of the SR 78 Managed Lanes and connectors with I-5 or I-15. It also incorporates operational improvements on SR 78 identified by Caltrans between Nordahl Road and Twin Oaks Valley Road that are not included in the 2050 RTP. This alternative also includes corridor transportation improvements programmed in the 2050 RTP. These improvements include the following:

- SPRINTER Double Tracking – which would add an additional track to the currently single-tracked SPRINTER transit line and increase service
- SPRINTER Extension to North County Fair
- SPRINTER Express Service
- San Marcos Circulator Shuttles
- Oceanside to Vista Rapid Bus Route
- Downtown Escondido to East Escondido Rapid Bus Route

Managed Lanes

The Managed Lanes alternative would add one lane in each direction to SR 78. These lanes would be accessible to HOVs for free and to other vehicles for a fee. HOVs would be classified as those vehicles with two or more occupants in 2020 and 3 or more occupants after 2035. Tolling policies for the Managed Lanes are shown in Table 1. Further definition and examples of Managed/Express, Toll and HOV lanes are included in Appendix B.

The alternative includes all SANDAG 2050 RTP improvements and additional operational improvements on SR 78 between Nordahl Road and Twin Oaks Valley Road, as identified by Caltrans. Auxiliary Lane and interchange improvements included in the 2050 RTP are provided in Table 2.

Connector ramps between SR 78 and perpendicular highways would also be incorporated into this alternative. This would include connector ramps between the SR 78 Managed Lanes and the existing I-15 Express Lanes; between the GP lanes on SR 78 and I-5; and between the SR 78 Managed Lanes and the planned I-5 Express Lanes.

Transit enhancements, as defined in Baseline B, are included in the Managed Lanes alternative, as well as circulator services proposed as part of the SR 78 Corridor Study. These circulator services would include connecting services between SPRINTER Stations, Palomar College and California State University, San Marcos; between the SPRINTER Rancho Del Oro Station and MiraCosta College; and between East Escondido and San Marcos.
Table 1: Toll Policies for Managed Lanes Alternative

<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicle Class</th>
<th>Access Policy</th>
<th>Toll Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>SOV</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV2+</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Transit</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Truck</td>
<td>Not Allowed</td>
<td>N/A</td>
</tr>
<tr>
<td>2035, 2050</td>
<td>SOV</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV2</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV3+</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Transit</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Truck</td>
<td>Not Allowed</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 2: 2050 RTP SR 78 Auxiliary Lanes and Interchange Improvements

<table>
<thead>
<tr>
<th>Name</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Camino Real to Rancho Del Oro</td>
<td>Eastbound Auxiliary Lane</td>
</tr>
<tr>
<td>El Camino Real to Rancho Del Oro</td>
<td>Westbound Auxiliary Lane</td>
</tr>
<tr>
<td>Emerald Drive</td>
<td>Westbound Auxiliary Lane before exit ramp to Emerald</td>
</tr>
<tr>
<td>Las Posas Road to San Marcos Boulevard</td>
<td>Eastbound Auxiliary Lane</td>
</tr>
<tr>
<td>Las Posas Road to San Marcos Boulevard</td>
<td>Westbound Auxiliary Lane</td>
</tr>
<tr>
<td>Rancho Del Oro</td>
<td>Four direction interchange, connect SR 78 with the northern section of Rancho Del Oro</td>
</tr>
<tr>
<td>Rancho Del Oro</td>
<td>Construct southern extension of Rancho Del Oro to Marron</td>
</tr>
<tr>
<td>Sycamore Avenue</td>
<td>Westbound Auxiliary Lane before exit ramp to Sycamore</td>
</tr>
<tr>
<td>Twin Oaks Valley Road to Nordahl Drive</td>
<td>Eastbound Auxiliary Lane</td>
</tr>
<tr>
<td>Twin Oaks Valley Road to Nordahl Drive</td>
<td>Westbound Auxiliary Lane</td>
</tr>
</tbody>
</table>

Tolled Lanes

The Tolled Lanes alternative includes all of the physical improvements included in the Managed Lanes alternative. However, all vehicles, with the exception of transit service, using the new lanes would be required to pay a toll, including HOVs. The tolling policy is summarized in Table 3. Additionally, express bus service connecting Oceanside and Escondido via SR 78 utilizing the Tolled Lanes would be implemented in the 2020 phase only. This would provide a non-toll, enhanced mobility alternative in the corridor in the interim period before SPRINTER double tracking is completed and further enhances transit capacity in the corridor.

The Tolled Lanes alternative includes all SANDAG 2050 RTP improvements and additional operational improvements on SR 78 between Nordahl Road and Twin Oaks Valley Road, as identified by Caltrans and not included in the 2050 RTP. It also includes all transit enhancements identified in the Managed Lanes alternative.
### Table 3: Toll Policies for Tolled Lanes Alternative

<table>
<thead>
<tr>
<th>Year</th>
<th>Vehicle Class</th>
<th>Access Policy</th>
<th>Toll Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>SOV</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV2+</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>Transit</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Truck</td>
<td>Not Allowed</td>
<td>N/A</td>
</tr>
<tr>
<td>2035, 2050</td>
<td>SOV</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV2</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>HOV3+</td>
<td>Allowed</td>
<td>Tolled</td>
</tr>
<tr>
<td></td>
<td>Transit</td>
<td>Allowed</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Truck</td>
<td>Not Allowed</td>
<td>N/A</td>
</tr>
</tbody>
</table>

#### 2.3 Alternatives Evaluation Approach

To compare the alternatives, the traffic, engineering, and environmental analyses were conducted and evaluated against screening criteria (discussed further in Section 7.0 - Alternatives Evaluation of this document). The following screening criteria were developed by SANDAG and the SR 78 Corridor Study Technical Working Group (TWG) to evaluate the defined alternatives based on issues identified in the corridor and taking into account evaluation criteria used in the 2050 RTP:

- Travel Times
- Arterial Level of Service
- Safety
- Improvement to Transit and HOV Mobility
- Study Area Mode Shares
- Percent of SR 78 Congested
- Estimated Right-of-Way Needed
- Potential Impact on Sensitive Environments
- Person Hours Saved
- Cost-Effectiveness

The methodology and some high-level analysis for these performance criteria are discussed in the following sections: Section 3.0 - Traffic Analysis; 4.0 - Engineering Feasibility; 5.0 - Planning Level Capital Cost Estimate; and 6.0 - Environmental Constraints.
Table 4: SR 78 Corridor Study Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Baseline A - No Build and 2010 RTIP</th>
<th>Baseline B - 2050 RTP without SR 78</th>
<th>Managed Lanes Alternative</th>
<th>Tolled Lanes Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2035</td>
<td>2050</td>
<td>2020</td>
</tr>
<tr>
<td><strong>SR 78 Enhancements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managed Lanes*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tolled Lanes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary Lanes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>I-15/SR 78 Managed Lanes Connectors*</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>I-5/SR 78 Freeway-to-Freeway Connectors*</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I-5/SR 78 Managed Lanes Connectors*</td>
<td></td>
<td></td>
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<tr>
<td><strong>Transit Enhancements</strong></td>
<td></td>
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<tr>
<td>SPRINTIER Double Tracking and Service *</td>
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<td></td>
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<tr>
<td>SPRINTIER Extension to North County Fair*</td>
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<tr>
<td>SPRINTIER Express Service*</td>
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<tr>
<td>San Marcos Shuttles *</td>
<td></td>
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<td></td>
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<tr>
<td>Oceanside to Vista Rapid Route*</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Downtown Escondido to East Escondido Rapid*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express Bus Service (Escondido to Oceanside)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Routes (1 and 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Escondido to San Marcos Loop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Enhancements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation Demand Management *</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation System Management *</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Note: Projects marked with an “*” are included in the 2050 RTP. Auxiliary lane projects include both 2050 RTP auxiliary lane projects and additional Caltrans auxiliary lane projects. The exception is in Baseline A where auxiliary lanes are only the existing lanes or those included in the 2010 Regional Transportation Improvement Program (RTIP).
3.0 TRAFFIC ANALYSIS

In order to analyze the potential traffic benefits and impacts of the defined alternatives, SANDAG generated travel demand model runs for the two baseline and two build alternatives. These runs produced ADT and time of day period information for the study area roadways. These data were derived for three planning and phasing horizons: 2020, 2035 and 2050. Data generated from the models were analyzed and evaluated against screening criteria. For the baseline alternatives and the study area-wide measures, all travel data required for the screening criteria were developed from model outputs. Screening criteria based on traffic analysis data included corridor travel times, the percent of the corridor in congested conditions, person hours saved by alternatives, study area mode share, and arterial level of service (LOS). The results of the traffic analysis are discussed in detail in Section 7.0 - Alternatives Evaluation.

The two baseline traffic analyses were based on the SANDAG model’s outputs, as all trips would utilize the GP lanes with no redistribution between lane types. For the build alternatives, SANDAG model results were post-processed using ECONorthwest’s Rapid Toll Optimization Model (RapidTOM) tool to develop facility-specific measures. Build alternative, facility-specific measures based on RapidTOM results included travel times, percent of corridor in congested conditions, and person-hours saved. Study area-wide travel screening criteria that were not impacted by the redistribution of users on the SR 78 facility included both the study area mode share and the arterial level of service.

3.1 TOLLED/MANAGED LANES METHODOLOGY AND RAPIDTOM

RapidTOM is an econometric model that facilitates rapid simulation of toll policy and network alternatives. It develops planning level feasibility measures using data on segment or corridor traffic volume, density and composition, and other variables. The model post-processed build alternative GP, Managed, and Tolled Lanes traffic forecasts derived from the SANDAG model to determine potential traffic, toll, and revenue outcomes for the study’s Managed and Tolled Lanes alternatives. Traffic volume outputs from the SANDAG model were reallocated across the GP and Managed or Tolled Lanes based on dynamic pricing of the Managed and Tolled Lanes. Dynamic pricing of the Managed and Tolled Lanes is a condition not included in the SANDAG model, which has fixed toll rates for AM peak (6 a.m. to 9 a.m.), PM peak (3 p.m. to 6 p.m.) and off-peak times.

Changes in distribution between the lanes by the dynamic pricing model (i.e., more vehicles in the GP lanes, fewer in the Managed Lanes or more vehicles in the Managed Lanes, fewer in the GP lanes) impacted the mobility performance of the build alternatives (Managed or Tolled Lanes). Therefore, all build alternative quantitative transportation screening criteria that were specific to the SR 78 facility were based on the RapidTOM outputs. Traffic data developed in the RapidTOM model were used to evaluate alternative mobility performance, as discussed in Section 7.0 - Alternatives Evaluation. By using this data, the transportation screening criteria for the Managed and Tolled Lanes alternatives were consistent with the revenue projections that form the basis for the financial feasibility analysis addressed in Section 8.0 of this document.

The toll optimization process begins by constructing a representation of the corridor in the Toll Optimization Model (TOM) system, the broader model of which RapidTOM is a version. It is developed from information on facility characteristics (e.g., volume delay relationships, number
of lanes, access and egress features). The TOM process is “seeded” by vehicle volumes obtained from regional model runs. The seed data are usually, but not always, obtained from an HOV run of the regional model. The vehicle volumes are provided by vehicle class and by the time of day of travel for the model years of interest.

In the SR 78 case, seed data were not provided from HOV runs, but rather from the modeling of Managed Lanes and Tolled Lanes alternatives in the regional model. Time of day information was limited to a three-hour AM peak and a three-hour PM peak, and off-peak periods for the model years 2020, 2035, and 2050. For model year 2020, these runs provided volume data for the single-occupancy vehicle (SOV), HOV2+, light truck, medium truck, and heavy truck vehicle classes. For model years 2035 and 2050, these runs provided data for the SOV, HOV2, HOV3+, light truck, medium truck, and heavy truck vehicle classes. The regional model runs were provided separately for both the Managed Lanes and Tolled Lanes alternatives for each of the model years.

3.2 Scenarios

The optimization of the RapidTOM model can be performed utilizing a variety of objectives. In order to evaluate the financial feasibility of the Managed and Tolled Lanes alternatives, two potential pricing strategies were used to estimate preliminary traffic and revenue forecasts. These pricing strategies have different objectives that represent the extremes of tolling pricing strategies, providing the full spectrum of traffic and revenue outcomes for the corridor. For modeling SR 78, tolls were dynamically optimized on a five-minute basis for individual segments under two alternative operating objectives:

**Toll Revenue Maximization** – this scenario has a goal of maximizing the revenue produced by the Managed or Tolled Lanes facility.

**Mobility Optimization** – the goal of this scenario is to minimize aggregate travel time cost for all users across both the GP and Managed or Tolled Lanes.

With the two build alternatives under these two scenarios, a matrix of four build options were analyzed, shown in Figure 2. In both scenarios, minimum Managed and Tolled Lane travel speeds of 45 miles per hour were imposed on the optimization process.
3.3 Assumptions

The TOM optimization process requires additional assumptions beyond the facility and seed volume data provided by the SANDAG regional model. The additional assumptions were derived from other, ancillary data obtained from SANDAG staff, Parsons Brinckerhoff staff, or information assembled by ECONorthwest from academic sources or similar Managed and Tolled Lane facilities.

The following are the major supporting assumptions adopted for the SR 78 simulations:

- **The value of time distribution for SOVs** was derived using the mean value of time used on similar RapidTOM projects in California. Although SANDAG provided the values of time implicit in the mode-choice step in its regional model, the values were lower than is typically observed in higher-income, developed settings. For example, the following are mean values of time developed for recent Los Angeles County Metropolitan Transportation Authority (LA Metro) work, by time of day:
  
  - LA Metro, AM peak: $12.03/hr
  - LA Metro, PM peak: $11.97/hr
  - LA Metro, Night: $8.56/hr
  
  In contrast, the SANDAG mode-choice model coefficients are provided by income class and trip purpose as shown in Table 5. As income distribution of the SR 78 corridor trips was not developed, an average value of time could not be calculated. Instead, the lowest average value from the LA Metro modeling, $8.56/hour, was adopted as a midpoint.
between the SANDAG value of time matrix and the LA Metro average values of time. This assumption may be conservative for peak period travel on SR 78.

### Table 5: SANDAG Travel Demand Model Values of Time

<table>
<thead>
<tr>
<th>Income Category</th>
<th>Home-Based Work</th>
<th>Home-Based Other</th>
<th>Non-Home Based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>$2.02</td>
<td>$1.02</td>
<td>$1.01</td>
</tr>
<tr>
<td>Mid</td>
<td>$5.42</td>
<td>$2.74</td>
<td>$2.69</td>
</tr>
<tr>
<td>High</td>
<td>$12.92</td>
<td>$6.40</td>
<td>$6.60</td>
</tr>
</tbody>
</table>

- **The value of time distributions for the other vehicle classes** were calculated by scaling the SOV mean value of time by the occupancies. Truck mean values of time were calculated by scaling the SOV mean value of time by a factor of three. This factor is based on academic research that accounts for the driver’s wages as well as logistical demands (Smalkoski and Levinson, 2005). The values of time used were originally computed in 2009. Because values of time are believed to be related to household wages (for which per capita income is a proxy), values of time are often brought current to the model year through inflation adjustments. However, in this case, no trend adjustments in values of time were made because intervening economic trends do not suggest strong growth in wages or incomes in the region.

- **Continuous distributions of the values of time** were used by the TOM process. In the absence of detailed, local estimates of the distribution of values of time, a relative-variance method was employed that adapts the shape of the time-value distribution to the relevant average values. Although a mean value of time has been assumed, not all travelers behave as if their value of time is the mean; instead there is a distribution of values around the mean. The relative variance is a parameter that defines this distribution and has been found to be consistent across regions. Therefore, a San Diego-specific value was not developed.

- **Vehicle occupancies** were used to scale values of time by vehicle for the various vehicle classes. The occupancy of HOV2 vehicles was set to 2.0, HOV2+ average occupancy was set to 2.5, and HOV3+ average occupancy was set to 3.5. These are common occupancy assumptions.

- **Dynamic tolling (tolling that varies with current, ambient conditions)** requires some knowledge of the variability of traffic volumes across the modeled times of day. This information is often available locally by accessing high-resolution traffic counters (“loop detectors”) implemented at selected locations in the regional highway network. When available locally, RapidTOM utilizes large draws from the historical count databases and measures variability over the course of a recent year at 5-minute intervals. These efforts yield statistical traffic variability measures that allow the RapidTOM process to emulate toll variability and its effect on traffic and revenue. In the SR 78 case, Caltrans Performance Measurement System (PeMS) traffic counter data were available at several points along the corridor in each direction. Data used were from the one-year period spanning October 1, 2010 to September 30, 2011.
• **Managed Lanes participation rates** were used to adjust for the fact that not all eligible vehicles would wish, or be able, to travel in the lane that is optimal, given all other characteristics of the trip. Often, for example, merge-weave difficulties limit the ability of a vehicle to join a Managed Lane. This analysis assumed a participation rate of 85 percent to reflect ingress/egress and merge/weave issues based on experience with similar corridors.

• **Volume-delay relationships are obtained from the regional model.** The SANDAG regional model uses a logit-based Volume Delay Function (VDF) that is integrated in the TransCAD software. To avoid time-consuming editing of the TOM system's VDF library, this analysis estimated that the parameters of a Bureau of Public Roads VDF match the volume-delay relationship produced by the SANDAG regional model logit VDF.

• **Only weekday travel was modeled** due to insufficient data to explicitly incorporate weekend travel. Weekend travel peaking behavior is usually very different from weekday travel.

• **No "model feedback" analysis was conducted.** Model feedback is the iterative procedure of feeding TOM modeled tolls into the regional model and re-forecasting volumes and then tolls. This process is repeated until forecast volumes reach a stable equilibrium. The feedback process models users' behavioral responses to the tolls, such as changing mode choice. In the absence of model feedback, corridor volumes and revenues have a positive bias. The lack of model feedback steps between the travel demand model and RapidTOM distinguishes the RapidTOM process from the more general TOM process.

Although region-specific data are preferred when modeling Managed or Tolled lane projects, the various adaptations and imputations of data from other sources performed here are not out of the ordinary. Where such judgment calls are necessary, conservative judgments are made, such as selection of data or parameters that are biased toward yielding underperformance of the facility rather than over performance, particularly to counter the positive bias in volumes and revenues that the RapidTOM process produces. Although this is not a perfect substitute for having localized data, using results based on these estimates can provide useful and balanced information.

### 3.4 Summary of Results

Results from this analysis were used as inputs to the traffic screening criteria in Section 7.0 - Alternatives Evaluation and for developing net revenue estimates as part of the financial feasibility analysis discussed in Section 8.0. In addition, a few features of these results are worth highlighting:

• Under all alternatives and toll policy scenarios, Managed and Tolled Lane speeds would stay quite high, with averages rarely dipping below 60 mph. GP lane speeds would also remain fairly high, with vehicle-weighted averages only dipping significantly below 45 mph in the eastbound PM peak in 2050 for the Managed Lanes alternative under the revenue-maximizing objective.
Under the Revenue Maximization objective, revenues would be maximized by posting relatively high tolls that would result in fewer toll-paying users than under the Mobility Optimization objective. This would result in potentially high levels of GP lane congestion but a near free-flowing Managed or Tolled Lane. The benefit of the Managed or Tolled Lane does not rest in the absolute speed of the lane, but in its relative performance compared to the GP lanes.

Because of this, a true Revenue Maximizing toll algorithm would attempt to yield a difference between the Tolled or Managed and GP lane speeds that is as large as necessary to yield maximum revenues. If a larger volume of users were allowed to switch from the GP to the Managed or Tolled Lane, GP lane speeds would increase, and Managed or Tolled Lane speeds would decrease. With a decline in the relative speed advantage of the Managed or Tolled Lane, a user’s willingness to pay tolls on the margin would also decline, and as such, equilibrium toll prices would also decline.

Under the Mobility Optimization objective, the optimization process tends to entice large numbers of users, especially users with lower values of time, into the Managed or Tolled Lanes. This would result in lower tolls than in those alternatives with the Revenue Maximization objective.

Revenues are sensitive to the choice of carpool policy. Under an HOV2+ toll policy, as in the Managed Lanes alternative in 2020, many more vehicles are candidates to use the new lanes for free. This tends to make the speed advantages of the Managed Lanes more variable with toll-paying capacity than under the HOV3+ policy. If an HOV2+ policy were implemented in place of the HOV3+ policy modeled in 2035 and 2050, all revenues would fall.

Average tolls would be highest during the AM peak in the westbound direction, particularly in the Escondido-Vista segment of the facility. For the Managed Lanes alternative in 2020, under the Revenue Maximizing objective, the average posted toll in the AM peak for the westbound direction on the Escondido-Vista segment would be $0.10 per mile. For the Tolled Lanes alternative the same toll would be $0.14 per mile. Under the Mobility Optimization objective for the same time period, year, and segment, posted tolls would be $0.07 per mile for the Managed Lanes alternative and $0.05 per mile for the Tolled Lanes alternative. Toll levels would increase as traffic volumes and congestion increase in 2035 and 2050. For comparison, the average daily (not peak period) toll per mile on the I-15 is $0.19 per mile in the northbound direction and $0.15 per mile in the southbound direction (SANDAG, 2012).

Under Revenue Maximization, the average toll a customer would pay for an AM peak trip in the westbound direction between Escondido and Oceanside (approximately 17 miles) in 2020 would be $1.33 (2011$) for the Managed Lanes alternative. For Tolled Lanes, the average AM peak, westbound toll would be $2.05. Under Mobility Optimization, the average AM peak, westbound toll would be $0.96 per trip for the Managed Lanes alternative and $0.64 per trip for the Tolled Lanes alternative. In comparison, on the I-15 Express Lanes, the average weekday toll rate a customer pays is $2.04 in the northbound direction and $1.49 in the southbound direction (SANDAG, 2012) with average trip lengths of 10.63 and 10.27 miles, respectively. This is an average for the
whole day and tolls are often much higher during the peak. Tolls can range from $0.50 to $8 based on congestion in the lanes.

It is important to note that during any point during the three-hour long AM and PM peak periods, tolls may be significantly higher and GP lane speeds significantly lower and vice-versa than those of the three-hour average for the period. In summary, the level of revenues is sensitive to Managed or Tolled lane policy and pricing scenarios in a manner consistent with theoretical expectations. Because the RapidTOM tolling tool was used to develop traffic and corresponding revenue projections, it should be used primarily for sketch planning, and not for investment purposes. Although refined modeling and integration of more detailed engineering issues would change the levels of some of the performance measures reported here, they would not likely change the relative performance of various toll, carpool policy, and facility build assumptions.
4.0 ENGINEERING FEASIBILITY

The engineering review of the project included the definition of the high-level project footprint. This was accomplished by applying the standard Caltrans freeway cross section to the length of the corridor. Where there would be substantial impacts to existing structures and facilities, key design exemptions from the Caltrans Highway Design Manual (HDM) were identified. As this study is a high-level planning effort, the project footprint created through this process is conservative as it does not assume design exceptions besides those that would be critical to the project. Based on the high-level footprint, potential right-of-way and environmental impacts were identified.

4.1 Existing Information

Existing digital data were compiled to create a base map showing the existing SR 78 centerline, corridor parcel, and corridor environmental boundaries superimposed over aerial imagery. This study utilized the existing information described below:

- SR 78 centerline data in digital format from Caltrans
- SR 78 as-built bridge plans from Caltrans
- Commercially available digital aerial imagery
- San Diego Geographic Information Systems (SanGIS) parcel and environmental habitat geographic information systems (GIS) coverage
- Proposed auxiliary lane locations from SANDAG/Caltrans

4.2 Methodology – Corridor Footprint

In order to develop preliminary highway geometrics for the Managed and Tolled Lanes alternatives, with input from SANDAG and Caltrans, the following key assumptions were identified and used to define the high-level SR 78 Corridor footprint:

- A standard Caltrans freeway cross section, consisting of two (2) Managed or Tolled Lanes and six (6) GP lanes, was adopted for both build alternatives. Managed or Tolled Lanes were separated from the GP lanes by a 4-foot buffer. The standard section was applied throughout the corridor, unless design exceptions were warranted due to significant impacts to existing structures and facilities. This cross section is shown in Appendix C.
- All proposed operational auxiliary lanes and existing auxiliary lanes were included in the proposed corridor footprint by extending the applied cross sections in the applicable segments.
- Since topographic and profile information are not available, a 15-foot wide buffer was assumed for grading and/or retaining walls beyond the edge of the shoulder in both directions.
- This engineering study does not contain operational or geometric analyses of the existing interchanges.

Based on the standard project typical section and auxiliary lane locations, the high-level project footprint was developed by offsetting the centerline geometry to establish the new limit of improvements. Once this footprint was established, potential adjustments to the existing centerline were evaluated in order to reduce right-of-way and environmental impacts.
Additionally, a footprint was developed for Baseline A, which includes the corridor operational improvements programmed in the 2010 RTIP. Impact estimates based on this footprint allowed for comparison of impacts between the build and no build alternatives. Additional assumptions and design exemptions are discussed in the following sections.

4.3 Methodology – Interchanges

Based on the high-level project footprint assumptions, overcrossing bridges were reviewed to identify bridges that have to be replaced, bridges that have abutment slopes that could be replaced with walls, or those bridges that could remain in place. Bridge as-built plans were also reviewed to ensure that minimum vertical clearances would be met in the future widened condition.

Interchange limits were set to the ends of ramp geometry. Right-of-way and environmental impacts were limited to the mainline sections only and do not include potential impacts from interchange development. In order to develop a cost estimate, interchange improvements were classified into three categories:

- Complete rebuilding of interchange including bridge and ramps
- Widening of undercrossing bridge and reconstruction of ramps
- Realignment of ramps without major modifications to the existing interchange structure.

4.4 Frontage Roads

In the existing condition, there are extensive frontage roads on both sides of the freeway. In many locations, there is insufficient right-of-way to widen the freeway without impacting the adjacent frontage roads. The Corridor Study assumes that frontage roads, where impacted by the freeway widening, would be reconstructed with the existing full cross section at the displacement required by the new SR 78 cross section. The existing configuration would be preserved but no additional capacity would be added to frontage roads.

4.5 Right-of-Way and Environmental Impacts

Based on the defined high-level footprint, parcel lines and environmental resource boundaries were utilized to identify the areas of environmental impact and right-of-way acquisitions. Right-of-way estimates were based on only the areas where the high-level footprint intersected with private property. Parcels were classified as potential partial or full takes based on the extent of the impact, as well as the current utilization of the property. Potential right-of-way and environmental impacts due to reconstruction or reconfiguration of existing interchanges were not included in the estimate because these facilities have not been designed yet. Potential impacts due to realigned frontage roads are included in the estimates. The estimated potential right-of-way impacts for Baseline A and the Managed and Tolled Lanes alternatives are summarized in Table 6. The estimated potential sensitive environment impacts for Baseline A and Managed and Tolled Lanes alternatives are summarized in Table 7.

<table>
<thead>
<tr>
<th>Right-of-Way</th>
<th>Baseline A: No Build + RTP</th>
<th>Managed/Tolled Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: SanGIS, September 2010</td>
<td>1 acre</td>
<td>30-34 acres</td>
</tr>
</tbody>
</table>
Table 7: Estimated Potential Sensitive Environments Impact

<table>
<thead>
<tr>
<th>Sensitive Environments</th>
<th>Baseline A: No Build + RTP</th>
<th>Managed/Tolled Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitive Environments</td>
<td>0.5 acres</td>
<td>4 - 10 acres</td>
</tr>
<tr>
<td>Linear Feet of Contact with Rivers</td>
<td>600 feet</td>
<td>1,900 - 4,340 feet</td>
</tr>
</tbody>
</table>

Sources: National Wetlands Inventory, U.S. Fish and Wildlife Service, January 2010; SanGIS, September 2004; SanGIS, July 2006

### 4.6 Design Exceptions and Assumptions

This study does not identify all the possible design exceptions within the project limits. The inclusion of design exceptions at this stage of a project was assumed to be premature. However, the design exceptions that were assumed to be necessary to develop the high-level project footprint have been listed below:

- **Highway Design Manual (HDM), 301.1 and 302.1** - Traveled way width and Shoulder width (Mandatory) - At the locations of the two existing SPRINTER bridges, there is insufficient width between the columns to allow for the standard section.
- **HDM, 304.1** - Side slope standards (Advisory) - Because this is a developed corridor, with frontage roads and properties adjacent to the freeway, standard side slopes/grading requirements cannot be satisfied.
- **HDM, 309.1 (2)** - Horizontal Clearances - Clear Recovery Zone (Advisory) Since this is a developed corridor, with frontage roads and properties adjacent to the freeway, clear recovery zone requirements cannot be satisfied.
- **HDM, 309.2 (a)** - Vertical Clearances (Mandatory) - At El Camino Real Overcrossing, the vertical clearance over the future freeway facility would not meet the minimum requirement of 16.5 feet.

Additional results of the engineering review based on the methodology described above are discussed in the following sections: Section 5.0 - Planning Level Capital Cost Estimate; 6.0 - Environmental Constraints; and 7.0 - Alternatives Evaluation.
5.0 PLANNING LEVEL CAPITAL COST ESTIMATE

In accordance with the Caltrans Project Development Procedures Manual (PDPM), a preliminary rough order of magnitude cost estimate was developed for the project. It was based on the engineering assumptions and evaluation described in the previous section, Engineering Feasibility. The summary-level cost estimate is provided in Table 8. As this is a very preliminary stage of the project, a range of costs were developed for some items, which resulted in a range for the overall cost estimate. The cost methodology and assumptions are as follows.

Earthwork
Based on observations noted during field visits and commercially available software, a rough estimate of cuts and fills was developed to calculate earthwork quantities.

Pavement Structural Section
The width of the freeway was developed using the standard Caltrans cross section with limited design exceptions, as identified in the previous Engineering Feasibility section, including auxiliary lanes identified in the build alternatives. In the existing condition, sections of the inside shoulder were observed to be sloped against the adjacent mainline lanes. Costs for the removal and replacement of this median pavement were included as were costs for reconstruction or relocation of the frontage roads.

Retaining Walls and Barriers
The same assumptions made for the earthwork quantities were extended to identify the locations and heights of retaining walls. Due to the proximity of frontage roads and the built-out nature of the corridor, barriers were assumed between the frontage roads and the freeway, and also where there is insufficient width to meet the standard grading/clear recovery zone requirements. In addition, concrete barrier replacement for the sections with median pavement reconstruction was included.

Intelligent Transportation Systems (ITS)/Signage for Tolling
The number of Managed or Toll Lane access locations was determined based on the length and travel characteristics of the corridor. Unit costs for equipment were based on the cost estimate for the LA Metro Express Lanes on I-10 and I-110 in Los Angeles County.

Environmental Mitigation
A mitigation cost was applied to the potential sensitive environmental impacts determined in the footprint analysis assuming a 3:1 mitigation rate. This item also included landscaping costs for the length of the project.

Percentage Costs
Because of the preliminary stage of the project, for items such as traffic and lighting, utilities, drainage and water quality, stage construction, and minor items, percentages of the overall calculated costs were applied based on prior experience and projects.

Interchanges
This item included the rebuilding or reconfiguration of interchanges, where applicable. However, the costs of replacement of the I-5 and I-15 interchanges were not included in this project as the costs of replacing these interchanges are included in the 2050 RTP as separate projects. The cost of the structures, i.e., bridge replacement or widening, was included in this line item.
As described in the Engineering Feasibility section, interchanges were classified into three categories:

- Complete rebuilding of interchange including bridge and ramps
- Widening of undercrossing bridge and reconstruction of ramps
- Realignment of ramps without major modifications to the existing interchange structure.

Each of these categories was assigned a cost range, based on other Caltrans projects of similar magnitude. At some interchanges, the existing ramps tie into the frontage road rather than the cross street. With the widened freeway and current Caltrans ramp design criteria, these ramps may have to be reconstructed with the standard layout requiring extensive reconstruction and right-of-way acquisition. The overall interchange cost applied to the three categories of interchanges includes all of these costs.

**Right-of-Way**
Right-of-way impacts for the mainline were identified using the high-level project footprint. The costs for the various parcels were assigned based on the land use and historical prices. This cost also included right-of-way acquisitions for the reconstruction of the frontage roads. Right-of-way costs for interchanges were included in the costs for the interchange improvements as noted above.

**Contingency**
Based on the Caltrans PDPM, a 30-50% range for project contingency is recommended for projects in this stage of the design process. A contingency of 40% was used for the Corridor Study. Contingencies were applied to roadway and right-of-way costs but not to interchange costs. Contingencies were not included for interchanges as interchange costs are based on comparable total project costs which include contingencies.

**Unit Costs**
Where available, unit costs from bids on recent SR 78 corridor projects were used to develop unit costs for the SR 78 capital cost estimate. The projects included SR 78 Eastbound Auxiliary Lanes, SR 78 Westbound Auxiliary Lanes, and the Nordahl Road Bridge Replacement. Any unit costs that were not included in these bids were unit costs identified for the Mid-Coast Corridor Transit Project, which in turn were developed from the Caltrans Costs Database from 2010, escalated to 2011.
### Table 8: Planning Level Capital Cost Estimate (in 2011 dollars)

<table>
<thead>
<tr>
<th>Summary of Items</th>
<th>Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Earthwork</td>
<td>$16,800,000 - $16,800,000</td>
</tr>
<tr>
<td>2 Pavement Structural Section</td>
<td>$38,950,000 - $38,950,000</td>
</tr>
<tr>
<td>3 Specialty Items: Barriers, Walls</td>
<td>$73,000,000 - $73,000,000</td>
</tr>
<tr>
<td>4 Environmental Mitigation</td>
<td>$8,000,000 - $8,000,000</td>
</tr>
<tr>
<td><strong>Subtotal (for items 1-4)</strong></td>
<td>$136,750,000 - $136,750,000</td>
</tr>
<tr>
<td>5 ITS/Signage for Tolling</td>
<td>$11,200,000 - $11,200,000</td>
</tr>
<tr>
<td>Traffic and Lighting (including Electrical, Signing and Striping); 3% - 5%</td>
<td>$4,102,000 - $6,838,000</td>
</tr>
<tr>
<td>6 Utilities; 3% - 5%</td>
<td>$4,102,000 - $6,838,000</td>
</tr>
<tr>
<td>7 Drainage and Water Quality; 5% - 7%</td>
<td>$6,838,000 - $9,572,000</td>
</tr>
<tr>
<td>8 Stage Construction; 5% - 7%</td>
<td>$6,838,000 - $9,572,000</td>
</tr>
<tr>
<td>9 Minor Items - 10%</td>
<td>$13,675,000 - $13,675,000</td>
</tr>
<tr>
<td>10 Mobilization - 10%</td>
<td>$13,675,000 - $13,675,000</td>
</tr>
<tr>
<td><strong>Mainline Roadway Subtotal</strong></td>
<td>$197,180,000 - $208,120,000</td>
</tr>
<tr>
<td>11 Interchanges (including Structures)</td>
<td>$85,000,000 - $85,000,000</td>
</tr>
<tr>
<td>12 Right-of-Way</td>
<td>$112,872,000 - $117,248,000</td>
</tr>
<tr>
<td>13 Contingencies - 40%</td>
<td>$287,000,000 - $414,000,000</td>
</tr>
<tr>
<td><strong>Total Capital Construction Cost</strong></td>
<td>$682,052,000 - $824,368,000</td>
</tr>
<tr>
<td>15 Preliminary Design - 5%</td>
<td>$34,103,000 - $41,218,000</td>
</tr>
<tr>
<td>16 Final Design - 10%</td>
<td>$68,205,000 - $82,437,000</td>
</tr>
<tr>
<td>17 Project Management - 5%</td>
<td>$34,103,000 - $41,219,000</td>
</tr>
<tr>
<td>18 Construction Management - 12%</td>
<td>$81,846,000 - $98,924,000</td>
</tr>
<tr>
<td>19 Professional Liability - 2.5%</td>
<td>$17,051,000 - $20,609,000</td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td>$917,360,000 - $1,108,775,000</td>
</tr>
</tbody>
</table>

Note: Figures rounded to nearest $1,000.
6.0 ENVIRONMENTAL CONSTRAINTS

This review of environmental constraints in the SR 78 Corridor considers available information about corridor resources to examine the potential effects of implementing Managed or Tolled Lanes on SR 78 from I-5 to I-15. The review identifies environmental technical studies that likely will be required to support the project, evaluates the required environmental document types, and provides a preliminary list of permits that may be required for the improvements. This review was completed utilizing Caltrans Guidelines for Preparing a Preliminary Environmental Analysis Report, but does not contain all of the information required to support a Project Study Report (Project Development Support). Areas of significant environmental concern were observed during either site reconnaissance from public access areas or Caltrans right-of-way. This review is not an environmental document, does not contain substantial environmental analysis, and does not meet state or federal requirements for any form of environmental review process or approval.

6.1 Anticipated Environmental Approvals

Construction of Managed or Tolled Lanes in the SR 78 Corridor would likely require acquisition of right-of-way and have adverse impacts requiring mitigation. To meet California Environmental Quality Act requirements, an Environmental Impact Report is anticipated. Regarding the National Environmental Policy Act, the project is classified as a Class III action under 23 CFR771.115, which may meet the requirements for a Finding of No Significant Impacts. Because the size and location of the project would likely result in substantial public interest, Caltrans may elect to prepare an Environmental Impact Statement rather than an Environmental Assessment. As part of the Project Study Report process, Caltrans will determine the appropriate type of environmental document and necessary technical studies.

The City of San Marcos is currently working towards environmental approvals for widening a limited section of the SR 78 Corridor – approximately 0.75 miles between San Marcos Boulevard and Twin Oaks Valley Road – and expects it to be permitted in the fall of 2012.

6.2 Environmental Technical Studies

The Managed or Tolled Lanes alternatives would require completion of several technical studies. This section summarizes the currently available information and general scope of anticipated technical studies by environmental discipline. The necessary technical studies will be confirmed and refined by Caltrans as part of the project’s Project Study Report.

Land Use, Growth, Farmlands, and Timberlands

The SR 78 Corridor has suburban characteristics, and contains existing, planned, and potential Smart Growth place types: special use center, mixed-use transit corridor, community center, town center, and urban center. Residential land uses include single- and multi-family units, as well as mobile home parks and group quarters facilities such as student housing. The corridor contains a variety of employment and activity centers including shopping centers, retail/commercial, hotels/motels, low-rise office, healthcare, education, government, and industrial uses which are directly adjacent to the SR 78 Corridor. California State University, San Marcos (CSUSM) and Palomar College are major educational institutions situated directly adjacent to SR 78. The SPRINTER rail line offers infrastructure and services parallel to SR 78.
Corridor cities have recently experienced substantial growth, which is expected to continue, although at a slower rate, through 2050. Farmlands and timberlands are not significant resources in the corridor. Despite the low potential for adverse effects caused directly by the project, land use and growth should be addressed in a technical study because of the potential for indirect and cumulative effects.

**Community Impacts, Community Character, Cohesion, Utilities, Community Services, and Environmental Justice**

The SR 78 Corridor crosses through a series of communities, including the City of Carlsbad, City of Escondido, City of Oceanside, City of San Marcos, City of Vista, and parts of unincorporated San Diego County. Because there is an existing highway, the proposed improvements would likely not create substantial new adverse impacts to community character and cohesion. The corridor includes publicly-owned parklands and the Buena Vista Lagoon State of California Ecological Reserve. A take of some Ecological Reserve property may be necessary to construct the preliminary high-level footprint; therefore, the project may result in a Section 4(f) use of parklands. Detailed analysis would be required to determine if this impact is *de minimis*.¹ Mitigation would be required for any utilities or community services disrupted by project construction. A Community Impact Assessment should be completed for the project, including review of demographic data for potential Environmental Justice populations.

**Acquisitions and Displacements**

The build alternatives could require the acquisition of between approximately 30 and 34 acres of additional right-of-way. As parcels with existing residential and commercial development could potentially be impacted, an evaluation of acquisitions and displacements would be required.

**Visual and Aesthetics**

The build alternatives would widen an existing highway through a mixed-use area of commercial, residential, and open-space uses. Because of the existing highway, the project would not substantially alter the visual landscape. However, project features, such as retaining or noise walls or tolling equipment could create new visual elements; therefore, visual and aesthetic issues would require additional review.

**Cultural Resources**

The project must comply with Section 106 of the National Historic Preservation Act and California Public Resources Code 5024. Some resources that fall within these categories have been identified adjacent to the existing SR 78 corridor. At this point, it is not known whether the build alternatives would or would not affect any known historic properties; however, a survey of potentially eligible properties would need to be completed. At a minimum this includes establishing the Area of Potential Effects, consultation with Native American Tribes and other interested parties, and completing surveys for eligible historic properties, including archaeological, architectural, and paleontological resources.

¹ *De minimis* impacts related to historic sites are defined as the determination of either "no adverse effect" or "no historic properties affected" in compliance with Section 106 of the National Historic Preservation Act. *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource.
Hydrology, Floodplains, Water Quality, and Stormwater Runoff
The build alternatives would increase impervious surface, resulting in additional stormwater runoff and pollutant loading. The project would run adjacent to Buena Vista Lagoon and cross multiple streams. SR 78 is within the 100-year Federal Emergency Management Agency flood plain for Buena Vista Creek, Buena Creek, Agua Hedionda Creek, and San Marcos Creek. The project would likely require stormwater mitigation. The project would require technical studies considering waters of the U.S., hydrology and floodplains, water quality, stormwater runoff, and the effects of potential sea level rise on the project.

Geology, Soils, Seismic, and Topography
Geotechnical site characterization, including identification of potential seismic faults would be required. Site conditions could require design mitigation to address foundation requirements or faulting hazards.

Hazardous Waste and Materials
Because of the existing development in the corridor and potential acquisition of property, the build alternatives would require an Initial Site Assessment (ISA) and likely a Preliminary Site Investigation based on the findings of the ISA.

Air Quality
The study corridor is in a Non-attainment Area for ozone. The build alternatives would require an air quality technical study, including review of mobile source air toxics.

Noise and Vibration
The build alternatives would be Type I projects requiring a noise study and mitigation of noise impacts where doing so is feasible and reasonable. Much of the corridor is commercial, but residential uses, parklands, and institutional uses border the corridor in several locations. It is likely that noise levels would approach or exceed the noise abatement criteria in several locations.

Energy and Climate Change
It is not likely that energy use and greenhouse gas impacts would be significant; however, the build alternatives would require an energy technical report and a quantitative analysis of greenhouse gas emissions.

Biological Resources
The west end of the corridor begins at the Buena Vista Lagoon Ecological Reserve, which is owned and operated by the California Department of Fish and Game. The corridor includes several conservation areas identified in the Multiple Habitat Conservation Program (MSCP) for the jurisdictions in north San Diego County. The corridor crosses several streams and wetland habitat areas. Based on the right-of-way and environmental analysis discussed in the Engineering Feasibility section, the project could potentially affect:

- 4 - 10 acres of wetlands including:
  - 0 acres of Estuarine and Marine Wetland
  - 2 acres of Freshwater Emergent Wetland
  - 3 - 9 acres of Freshwater Forested/Shrub Wetland
- 1,900 - 4,340 linear feet of contact with rivers

The build alternatives would require consultation with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, California Department of Fish and Game, California Coastal
Commission, and Regional Water Quality Control Board. It would require a Wetlands Delineation, Natural Environment Study, and may require a Biological Assessment.

**Cumulative Effects**
The build alternatives would add capacity to a state highway. It has potential to influence land use and other resources and would require an analysis of indirect and cumulative effects.

**Section 4(f)**
There may be use of Section 4(f) resources at Buena Vista Lagoon State of California Ecological Reserve. A detailed analysis would be required to determine if this impact is *de minimis*. Additional corridor Section 4(f) resources are unknown pending future analysis of parklands and historic properties.

### 6.3 Anticipated Permits
Caltrans, through future project development steps, will define and confirm the permits required for implementation of the SR 78 project. At this time, it is anticipated that required major permits could include:

- Section 401 Water Quality Certification
- Section 404 (Individual or Nationwide)
- Section 10 Navigable Waters Permit (depending on the nature of work at Buena Vista Lagoon)
- Fish and Game 1602 Agreement
- Coastal Development Permit
- National Pollutant Discharge Elimination System (NPDES) Permit
- Section 7 consultation (likely formal consultation)
7.0 ALTERNATIVES EVALUATION

7.1 Methodology

To compare the alternatives, the results from the traffic, engineering, and environmental analyses were evaluated against screening criteria. The following screening criteria were utilized as defined in Section 2.3:

- **Travel Times** - This criterion evaluated model year forecasted average travel times for SOV, HOV and transit modes for the AM Peak, PM Peak, and Off-Peak time periods for the Oceanside-Vista, Vista-Escondido, and Oceanside-Escondido segments for both eastbound and westbound directions. Travel times for Baseline A and Baseline B were derived from the SANDAG model, and those for the Managed and Tolled Lanes alternatives were derived from the RapidTOM output.

- **Arterial Level of Service** - This criterion, derived from the SANDAG model, evaluated the differences in level of service (LOS) of the arterials adjacent to the SR 78 facility in the study area.

- **Safety** - Safety was qualitatively assessed based on planned improvements across the alternatives.

- **Improvement to Transit and HOV Mobility** - This criterion was qualitatively assessed based on planned transit and HOV improvements for each alternative.

- **Study Area Mode Shares** - This criterion, derived from the SANDAG model, evaluated SOV, HOV, transit, walk, and bicycle mode shares.

- **Percent of SR 78 Congested** - This criterion, derived from the SANDAG model and RapidTOM, measured the percent of SR 78 that has level of service (LOS) E or F and LOS F. This measure was provided for AM Peak and PM Peak periods.

- **Estimated Right-of-Way Needed** - This criterion measured the range of acres potentially needed for full and partial right-of-way takes based on the high-level project footprint as discussed in Section 4.5. The range reflects right-of-way needs considering potential revisions to the SR 78 centerline to minimize right-of-way and sensitive environment impacts.

- **Potential Impact on Sensitive Environments** - This criterion measured the potential acres of impact on sensitive environments and linear feet of contact (either crossing or lateral contact with the existing stream channel) with rivers as discussed in Section 4.5. The range reflects right-of-way needs considering potential revisions to the SR 78 centerline in order to minimize both the right-of-way and the sensitive environment impacts.

- **Person Hours Saved** - This criterion, derived from the SANDAG model and RapidTOM output, measured the difference in person hours traveled compared to the baseline. Person hours traveled was calculated for each of the modeled years for the entire length of the study corridor for off-peak, AM peak, PM peak, and daily periods. To obtain person hours saved, person hours traveled in Baseline A was subtracted from each of the alternatives.

- **Cost-Effectiveness** - Cost-effectiveness was considered qualitatively as the proportion of rough order of magnitude costs divided by estimated person hours saved.

Additionally, based on input from the Technical Working Group, the criteria were weighted to reflect the relative importance of some screening criteria. The travel times, percent of SR 78...
congested, and person hours saved criteria were each weighted twice as strongly as the other criteria in the final screening of alternatives.

### 7.2 Screening Analysis

Using the screening criteria, the build alternatives incorporating the two revenue scenarios were evaluated against the two baselines. When comparing the effectiveness of alternatives against each baseline, in general, the direction of improvement is similar but the magnitude is different. For brevity and clarity, comparisons to Baseline A are included in this discussion, though some of the results for Baseline B are shown in the figures to illustrate that the differences between the two are small.

The build alternatives were rated from 1 to 5 based on the effectiveness of the alternative relative to the baseline. It can be assumed that the baselines were rated 3 on all criteria. If an alternative was more effective than the baseline in a particular criterion, it was rated greater than 3; if it was less effective than the baseline, it was rated less than 3; and if it is as effective as the baseline, it was rated a 3. The screening criteria rating scale is also shown in Figure 3. All screening criteria ratings were developed in collaboration with the SR 78 Corridor Study Technical Working Group.

![Figure 3: Screening Criteria Rating Scale](image)

**Average Travel Times**
Travel times between Oceanside and Escondido in 2050 are presented in Figure 4 through Figure 7 for the off-peak, AM peak, and PM peak periods on SR 78 in both eastbound and westbound directions under the different combinations of revenue scenarios and alternatives.

As HOVs would be able to access the Managed Lanes but not the Tolled Lanes without paying a toll, HOV travel times are projected to be better in the Managed Lanes alternative. Under Revenue Maximization, the Managed and Tolled Lanes both would have improved travel times compared to Baseline A. However, the GP lanes under the Managed and Tolled Lanes alternatives generally would have increased travel times compared to Baseline A. Thus, the build alternatives received a screening criteria score of 3 under the Revenue Maximization scenario. Under Mobility Optimization, the travel times in both the GP lanes and Managed or Tolled Lanes would be either similar to or improved compared to Baseline A. Thus the build alternatives each received a score of 4 under the Mobility Optimization operations scenarios.

**Arterial Level of Service**
The arterial daily level of service was examined by comparing the LOS of the links in the area adjacent to SR 78, focusing on those that differed in LOS E or F among the alternatives. The build alternatives would have slightly fewer arterial links with LOS F compared to Baseline A, and the differences in arterial LOS between Managed and Tolled Lanes would not be substantial. Thus, the build alternatives were both rated 4.
Figure 4: Average Travel Times on SR 78 Facility – 2050 – Eastbound – Revenue Maximization Revenue Scenario

Note: GP = General Purpose    ML = Managed Lanes

Figure 5: Average Travel Times on SR 78 Facility – 2050 – Eastbound – Mobility Optimization Revenue Scenario

Note: GP = General Purpose    ML = Managed Lanes
**Figure 6: Average Travel Times on SR 78 Facility – 2050 – Westbound – Revenue Maximization Revenue Scenario**

![Bar chart showing average travel times for different scenarios and time periods.](chart1)

- Data points indicate travel times in minutes for Off-Peak, AM Peak, and PM Peak.

Note: GP = General Purpose, ML = Managed Lanes

**Figure 7: Average Travel Times on SR 78 Facility – 2050 – Westbound – Mobility Optimization Revenue Scenario**

![Bar chart showing average travel times for different scenarios and time periods.](chart2)

- Data points indicate travel times in minutes for Off-Peak, AM Peak, and PM Peak.

Note: GP = General Purpose, ML = Managed Lanes
Safety
The existing facility includes many elements that do not meet current Caltrans Design Standards including ramp configurations, sight distance exceptions, vertical clearances, and clear recovery zones. Both the Managed and Tolled Lanes alternatives would implement Caltrans Design Standards and would be physically identical. Therefore both alternatives would result in improved safety, with a screening criteria score of 5, compared to Baseline A.

Improvement to Transit and HOV Mobility
The Managed Lanes alternative would allow for HOVs (2+ in 2020, 3+ in 2035 and 2050) to access the uncongested facility for free, whereas Tolled Lanes would treat HOVs the same as SOVs and require them to pay a toll for access. Both Managed and Tolled Lanes alternatives would include additional transit corridor bus routes that are not included in the Baseline alternatives.

Over Baseline A, the build alternatives would include corridor transit improvements planned in the 2050 RTP, including the double-tracking and extension of the SPRINTER. In addition, the Tolled Lanes alternative would provide express bus service on SR 78 in the 2020 phase in order to provide an enhanced mobility option in the corridor as an alternative to paying a toll. This service would be phased out with the implementation of the SPRINTER double tracking as it would provide a replacement enhanced mobility option.

Based on qualitative review of the transit and HOV elements, the Managed Lanes alternative scored a 5 under both scenarios because of improved HOV and transit options. Because the Tolled Lanes alternative would provide less incentive for HOV travel but still include enhanced transit options, it scored a 4 under Mobility Optimization and 3 under Revenue Maximization.

Study Area Mode Share
The mode shares in the study area for transit, HOV, and bicycle/pedestrian modes were analyzed for peak home-based work trips. As shown in Figure 8, the share of SOV travel would be highest in Baseline A, at 82.7%, and lowest in the Tolled Lanes alternative, at 81.4%. Because the differences in mode share among the alternatives were minimal, they were rated the same score of 3.
The percent of congestion in the GP lanes was evaluated in the peak period, peak direction. These results are summarized in Figure 9 and Figure 10. Congestion in the Managed or Tolled Lanes was not part of the evaluation as by design these lanes are not congested. Pricing of the lane is varied to ensure there is no congestion. Under a Revenue Maximization revenue objective, the build alternatives would see an increase in congestion in the GP lanes. In order to maximize revenue, the time discrepancy between the GP and Managed or Tolled Lanes would need to be increased which would result in more congested GP lanes. Under Revenue Maximization, the Managed Lanes alternative would be less congested than the Tolled Lanes alternative but GP lanes in both alternatives would be more congested than the no build alternative. As such, under Revenue Maximization, the Tolled Lanes alternative was scored a 1 and the Managed Lanes alternative was scored a 2. In the Mobility Optimization scenarios, congestion would be similar to the no build alternatives with slightly less congestion in the Managed Lanes alternative. Because of this, under Mobility Optimization, the Tolled Lanes alternative was scored a 3 and the Managed Lanes alternative was scored a 4.

### Percent of SR 78 Congested

The percent of congestion in the GP lanes was evaluated in the peak period, peak direction. These results are summarized in Figure 9 and Figure 10. Congestion in the Managed or Tolled Lanes was not part of the evaluation as by design these lanes are not congested. Pricing of the lane is varied to ensure there is no congestion. Under a Revenue Maximization revenue objective, the build alternatives would see an increase in congestion in the GP lanes. In order to maximize revenue, the time discrepancy between the GP and Managed or Tolled Lanes would need to be increased which would result in more congested GP lanes. Under Revenue Maximization, the Managed Lanes alternative would be less congested than the Tolled Lanes alternative but GP lanes in both alternatives would be more congested than the no build alternative. As such, under Revenue Maximization, the Tolled Lanes alternative was scored a 1 and the Managed Lanes alternative was scored a 2. In the Mobility Optimization scenarios, congestion would be similar to the no build alternatives with slightly less congestion in the Managed Lanes alternative. Because of this, under Mobility Optimization, the Tolled Lanes alternative was scored a 3 and the Managed Lanes alternative was scored a 4.
Figure 9: Percent of General Purpose Lanes in LOS E or F – 2050 – Eastbound PM Peak - Oceanside to Escondido

Baseline A: No Build + 2010 RTIP  
Baseline B: 2050 RTP w/o SR 78  
Tolled Lanes Alternative  
Managed Lanes Alternative  
Alternative  
Alternative  
LOS E/F  
LOS F

Figure 10: Percent of General Purpose Lanes in LOS E or F - 2050 – Westbound AM Peak - Oceanside to Escondido

Baseline A: No Build + 2010 RTIP  
Baseline B: 2050 RTP w/o SR 78  
Tolled Lanes Alternative  
Managed Lanes Alternative  
Alternative  
Alternative  
LOS E/F  
LOS F
Estimated Right-of-Way Needed
A rough order of magnitude of right-of-way necessary for each proposed alternative was estimated using the developed high-level project footprint and SanGIS parcel data. The estimate assumed the standard Caltrans cross section and no interchange impacts. While it is likely that there would be right-of-way impacts due to interchange reconfiguration, ramp configurations have yet to be designed and therefore the right-of-way required was impossible to estimate.

Impacts from the widening of the mainline and required relocation of existing frontage roads included potential full and partial takes. The build alternatives would have the same high-level footprint and therefore the same right-of-way needs. The range of 30-34 acres for the Managed or Tolled Lanes, shown in Table 9, considered widening based on the existing centerline and potential revisions to the centerline to reduce impacts.

Based on the larger high-level footprint of the Managed or Tolled Lanes alternatives, compared to the Baseline A impact of one acre (based on the footprint of improvements included in the 2010 RTIP), each were given a screening criteria score of 2.

Table 9: Estimated Potential Right-of-Way Impacts

<table>
<thead>
<tr>
<th></th>
<th>Baseline A: No Build + RTP</th>
<th>Managed/Tolled Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right-of-Way</td>
<td>1 acre</td>
<td>30-34 acres</td>
</tr>
</tbody>
</table>

Source: SanGIS, September 2010

Potential Impact on Sensitive Environments
The potential impact on sensitive environments includes the estimated impact on wetlands, streams, and lagoons for each alternative. The estimate assumed a standard Caltrans cross section and no interchange impacts, and the impacts included required relocations of frontage roads and existing ramp configurations. Identical in methodology to the right-of-way impacts, the build alternatives would have the same high-level footprint and therefore the same impacts on sensitive environments. The ranges would encompass impacts based on the widening with the existing centerline and potential shifts to the centerline to reduce right-of-way and sensitive environment impacts. As shown in Table 10, the Managed or Tolled Lanes could have an impact of 4 to 10 acres of sensitive environments and 1,900 to 4,340 linear feet of contact with rivers compared to 0.5 acres and 600 feet in Baseline A. Based on the build alternatives’ greater impact on sensitive environments, they each received a screening criteria score of 2.

Table 10: Estimated Potential Sensitive Environments Impact

<table>
<thead>
<tr>
<th></th>
<th>Baseline A: No Build + RTP</th>
<th>Managed/Tolled Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitive Environments</td>
<td>0.5 acres</td>
<td>4 - 10 acres</td>
</tr>
<tr>
<td>Linear Feet of Contact with Rivers</td>
<td>600 feet</td>
<td>1,900 - 4,340 feet</td>
</tr>
</tbody>
</table>

Sources: National Wetlands Inventory, US Fish and Wildlife Service, January 2010; SanGIS, September 2004; SanGIS, July 2006
Person Hours Saved
The estimated person hours traveled on the SR 78 Corridor in Baseline A, no build with 2010 RTIP improvements, is 70,000 person hours per day. Figure 11 presents the daily person hours saved compared to Baseline A. All the build alternatives would reduce person hours traveled. As shown in Figure 11, the pricing strategy would substantially affect the amount of person hours saved. The Managed Lanes and Tolled Lanes alternatives in the Revenue Maximization scenario each would save about 12,000 person hours, or about a 17% reduction. In contrast, in the Mobility Optimization scenario, Tolled Lanes would save 3,000 person hours and Managed Lanes would save about 5,000 person hours, or a 5- and 7-percent reduction, respectively.

The alternatives would reduce person hours traveled more substantially under Revenue Maximization because the Managed and Tolled Lanes were priced so that there would be a larger difference in speeds between the Managed/Tolled Lanes and the GP lanes. The higher person-hours saved under Revenue Maximization would result from the relatively higher travel time savings by the users in the Managed and Tolled Lanes over the Mobility Optimization scenario. While there would be fewer users of the Managed or Tolled Lanes in the Revenue Maximization Scenario, the significant amount of time they would save more than compensates for other users who would have slightly longer travel times in the GP lanes. Additionally, higher vehicle occupancies in the Managed and Tolled Lanes would lead to relatively higher person hours saved.

Because the Managed and Tolled Lanes under the Revenue Maximization scenario would substantially reduce person hours, they each received a score of 5, compared with the alternatives under the Mobility Optimization scenario, which received a score of 4.

Figure 11: 2050 Daily Person Hours Saved on SR 78 Corridor

Note: Compared to a Baseline A: No Build +2010 RTIP of 70,000 person hours per day
Cost-Effectiveness
Cost-effectiveness was considered qualitatively as the proportion of rough order of magnitude costs divided by estimated person hours saved. Because the cost of the Managed and Tolled Lanes alternatives would be the same, the only difference between them would be the denominator: person hours saved. The Managed and Tolled Lanes alternatives would have a higher person hours saved under the Revenue Maximization scenario than under Mobility Optimization. Therefore, the cost-effectiveness of both build alternatives was 4 under the Revenue Maximization scenario and 3 under the Mobility Optimization scenario.

7.3 Comparing 2020, 2035, and 2050
The alternative and scenario combinations perform slightly differently in each of the horizon years because of policy changes that are planned through 2050. In 2035, the HOV policy allowing two or more occupants (HOV2+) would change to allowing three or more occupants (HOV3+). Moreover, the Tolled Lanes alternative would provide express bus service on SR 78 in the 2020 phase in order to provide enhanced mobility alternatives in the corridor rather than paying a toll. However, this service would be discontinued by 2035, when increased SPRINTER service will be in place. In addition, I-15/SR 78 HOV connectors are planned for 2020, and I-5/SR 78 HOV and freeway connectors are planned for 2035. All of these changes would impact corridor performance at different time periods. The screening criteria evaluation is based on performance in the year 2050, when the planned improvements in the 2050 RTP are fully built out.

7.4 Results
The screening analysis results are presented in the evaluation matrix in Figure 12 to summarize the relative merits of each alternative in each scenario. This matrix compares the build alternatives to Baseline A.

Based on this screening criteria analysis, the Managed Lanes alternative under the Mobility Optimization scenario performs the best. When compared to Baseline B, the build alternatives perform similarly, except that the Managed Lanes alternative under Revenue Maximization ranks second in performance, followed by the Tolled Lanes alternative under Mobility Optimization. However, the differences in performance among the alternatives compared to the two baselines are not substantial.
### Figure 12: Screening Criteria Matrix Compared to Baseline A - Weighted

<table>
<thead>
<tr>
<th>Screening Criteria</th>
<th>Revenue Maximization</th>
<th>Mobility Optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolled Lanes Alternative</td>
<td>Managed Lanes Alternative</td>
</tr>
<tr>
<td>1 Travel Times (SOV/HOV/Transit)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2 Arterial Level of Service</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3 Safety</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4 Improvement to Transit and HOV Mobility</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>5 Mode Shares (Transit/HOV/Bike/Ped)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>6 Percent of SR 78 Congested</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7 Right-of-Way</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8 Sensitive Environments</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>9 Person Hours Saved</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10 Cost-Effectiveness</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

**Alternative Strategy Summary**

(Average of Each Measure with double weight given to measures 1 - Travel Times, 6 - Percent of SR 78 Congested, and 9 - Person Hours Saved)

<table>
<thead>
<tr>
<th></th>
<th>Revenue Maximization</th>
<th>Mobility Optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.1</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>4.8</td>
<td></td>
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</tbody>
</table>
8.0 FINANCIAL FEASIBILITY

The SANDAG 2050 RTP includes the addition of two Managed Lanes on SR 78. The implementation of Tolled Lanes as an alternative to Managed Lanes could provide a tool for project implementation if anticipated sources of project funding became constrained. Net toll revenues could potentially be applied against the capital cost of project development. The SANDAG 2050 RTP assumed that TransNet sales tax revenues would contribute approximately fifty percent of the SR 78 project’s capital costs. The rest of the funds would come from a variety state and federal funding programs. Tolled Lanes were investigated as a way to potentially fill funding gaps if available state and federal funds were insufficient. The following analysis developed an estimate for the potential capital funding contribution from Tolled Lanes.

In order to evaluate the potential funding contribution from the implementation of Tolled Lanes, revenues were estimated based on travel demand and toll forecasts. Net revenue made available for financing must account for the operations and maintenance costs of a Tolled Lane. The estimation of net revenues for the SR 78 Tolled Lanes approximates the funding contribution from tolls that could support toll revenue bonds. Included in this analysis is a review of the process used to determine funding capacity and the major assumptions driving those results.

8.1 Revenue Forecasting Methodology and Assumptions

The process for estimating revenues for the SR 78 Tolled Lanes can be organized into three distinct steps:

1. Review and incorporate traffic forecasts;
2. Annualize toll revenues, interpolate/extrapolate them over the financing horizon, and make appropriate operations and maintenance deductions; and
3. Apply financing assumptions to a simple financial model to determine a funding contribution range.

The following sections of this report will review the underlying assumptions for estimating SR 78 revenues, and document those results using the above three steps as a framework.

8.1.1 Traffic Forecasts

To estimate revenue projections for the project, first the traffic forecasts for the Tolled Lanes were developed. SANDAG generated travel demand model runs for the alternatives at the three planning and phasing horizons—2020, 2035 and 2050—which were then post-processed using ECONorthwest’s RapidTOM tool, as described in Section 3.2. In order to capture a feasible range of revenues, the pricing strategy and value of time input assumptions were varied.

Pricing Strategy Assumptions

The modeling optimization can be performed under a variety of objectives. Two potential pricing strategies were used to estimate preliminary traffic, toll, and revenue forecasts. These pricing strategies have different objectives that represent the extremes of tolling pricing strategies, providing the full spectrum of traffic and revenue outcomes for the corridor:

- **Toll Revenue Maximization** - this scenario has a goal of maximizing the revenue produced by the Managed or Tolled Lanes.
- **Mobility Optimization** - this scenario minimizes aggregate travel time cost for all users across both the GP and Managed or Tolled Lanes.

**Value of Time Assumptions**

The assumed value of time for this financial analysis significantly impacts revenue projections. A more refined revenue estimate would require a corridor- and facility-specific value of time to be developed through a survey of current and potential facility users. Values of time vary significantly based on the profiles of facility users. In order to account for this in the financing analysis, a higher and lower bound for value of time assumptions were used to develop a range of financial estimates.

The lower value of time assumption is the same as the assumption used for the traffic forecasts in Section 3.4. Reasoning for this value of $8.56 per hour was discussed in Section 3.4. While this lower value of time was used for the traffic analysis, a higher value of time would not change the projected traffic conditions summarized in Section 7.2. Because all users would have a higher value of time, the number of users in the Tolled Lanes and GP lanes would remain nearly the same. Tolls would increase corresponding to value of time. Even though the travelers in the GP lanes would have a higher value of time, the distribution of values of time among all travelers would remain the same and additional travel would not shift into the Tolled Lanes.

The higher value of time assumption accounted for the fact that users of a Tolled Lane may have a higher value of time than the average corridor users. This is not necessarily related to higher incomes but instead to how every individual values their time in a particular situation. For example, travelers could value their time more when they need to pick a child up from daycare, get to an airport to catch a flight, or arrive at work on time. Research on similar facilities has shown that the majority of users do not travel on them regularly. This higher value of time finding was based on studies of Managed Lanes facilities in Southern California. One study surveyed travelers on the I-15 Express Lanes in San Diego and estimated value of time was $30 per hour during the morning peak period in 1998 (Brownstone et al., 2002). Another study of the SR 91 Managed Lanes in Orange County found peak period commuters have a value of time of approximately $13 to $16 per hour (Sullivan, 2000). In light of this research, an upper-bound value of time was developed by doubling the lower value of time assumption, resulting in a higher value of time estimate of $17.12 per hour.

**Average Toll-Paying Volume Results**

For the Tolled Lanes alternative, all modeled users of the alternative were assumed to be toll-paying. Average hourly volumes on the corridor by time of day, direction and segment were the same as the volumes used for the traffic analysis. Figure 13 displays the average volumes for the entire corridor westbound between Escondido and Oceanside. As the values of time of all users double, and the distribution of values of time remain the same, the volumes between the low and high values of time essentially remain the same. As discussed in the screening analysis in Section 7.2, the volumes are lower under Revenue Maximization because fewer users are willing to pay a higher toll.
Average Tolls Results
Average tolls were calculated on a per mile basis for the corridor and across different times of day. Average tolls for the entire corridor westbound between Escondido and Oceanside are shown in Figure 14. Average tolls are nearly linearly related to value of time. As the higher value of time is double the lower value of time, the tolls for the two different assumptions are similarly related.

Note: VOT = Value of Time

Figure 14: Average Toll - Escondido to Oceanside - Westbound
8.1.2 Annualized Toll Revenues and Operations and Maintenance Deductions

Hourly volumes by segment per hour and toll rates per mile were converted to annual gross revenue by applying the following assumptions.

- **Weekend tolling** - Since the travel demand model only produces traffic volumes for weekdays, assumptions were made about the weekend and holiday traffic and revenue potential. Based on experience with other similar facilities, revenue for weekends was approximated to be 40% of the average weekday revenue. The weekend volume was estimated to be 80% of the average weekday volume. The volume is higher than the revenue because volume and congestion (which is a proxy for revenue) are not linearly related.

- **Annualization** - It was assumed that there would be 255 weekdays and 110 weekend days and holidays per year.

- **Peak tolls** - Because of the low rate of off-peak tolls, only peak hour tolls were included in the annualized revenues.

After projecting annual revenue for low and high values of time and different pricing scenarios, net toll revenues were estimated by accounting for operating and maintenance and other costs. The following deductions were made from the gross toll revenue potential to yield the net revenues available to support financing on an annual basis, based on the experience of SANDAG operating the I-15 Express Lanes and information derived from other Managed and Tolled Lane facility operations:

- **Highway operating and maintenance costs** were based on SR 78 operations and maintenance costs defined in the SANDAG 2050 RTP of $5,000 (2011$) per lane mile. These costs included roadway maintenance related to flexible pavement, drainage, cleaning, and other standard roadway maintenance activities performed by Caltrans. It was assumed that there would be 34 lane miles: 1 lane in each direction for the 17-mile long corridor. This results in an annual cost of $170,000 (2011$).

- **Enforcement and tolling equipment utilities costs** were based on costs from I-15 and a survey of comparable systems performed to develop operations and maintenance costs for the Bay Area Regional Express Lanes Network. An assumed cost of $100,000 per year (2011$) was applied.

- **Toll collection backend operating costs** were estimated based on current operating costs on I-15. A range of operating costs of $0.80 - $1.00 per trip (2011$) was analyzed to account for potential economies of scale associated with adding an additional Tolled or Managed Lanes facility to the region. These costs include toll processing, technical services, telecommunications, administration, marketing, transaction costs, banking fees, credit card fees, and violation enforcement processing.

- **Toll collection equipment maintenance costs** were based on current maintenance contracts for tolling equipment on I-15. Maintenance costs were estimated at $230,400 per year, assuming 4 variable tolling message signs and 4 tolling locations provided in each direction.
All operations and maintenance costs were escalated by 2.5% per year to account for inflation and/or by transactions or toll trips as relevant to the measurement of these cost components.

Toll rates were escalated by 2.5% per year to account for inflation.

Revenue leakage or uncollectable tolls were assumed as a revenue deduction. This includes toll violation or tolls that are not paid as well as any potential toll-payers that are exempt from paying tolls, such as enforcement and emergency vehicles. Rates were assumed to be 15% for Managed Lanes and 10% for Tolled Lanes. A higher rate was expected for Managed Lanes because enforcement is more complex for this alternative due to HOVs being exempt from paying tolls.

Ramp-up factor assumptions were used in the first two years of operations, as it is expected that potential users may need to obtain a FasTrak transponder and become comfortable with how to use the facility. Year one of operations assumes 85% of the forecasted users and year two assumes 95%. Years following will include 100% of forecasted users.

8.2 Net Toll Revenue Projections

Based on these assumptions, annual net revenue projections for the Tolled Lane alternative were developed using sensitivity analysis to consider the different pricing strategies, values of time, and operations and maintenance costs.

Based on this sensitivity analysis, it is clear that certain assumptions in the revenue analysis significantly impact the feasibility of Tolled Lanes to provide positive revenues that could potentially offset project capital costs. Some scenarios have negative net revenues in the early years of operation or throughout the study period, because operations and maintenance costs exceed projected gross revenues. Even those scenarios that are generally net revenue positive take a while to build to higher revenue production levels. Low revenues can limit the potential for financing. The scenarios that produce revenue immediately and have high rates of growth are those with the Revenue Maximization pricing strategy and a high value of time, either with low or high operations and maintenance costs. As such, the potential toll funding contribution from the assumptions of a Revenue Maximization pricing strategy and a high value of time was developed. For simplicity, only the scenario with the lower operations and maintenance costs was analyzed for financing.

8.3 Financing Assumptions

In order to evaluate the potential funding contribution of the Tolled Lanes alternative with a Revenue Maximization pricing scenario, financing assumptions appropriate to the relative predictability and uncertainty of the revenue stream were established. While Managed and Toll Lane projects may have a sound traffic base to build upon, their demand tends to be more volatile than typical toll roads. Small changes in the volumes on the adjacent, free GP lanes can lead to large swings in travel times, and thus, the time savings of the Tolled Lanes. As the dynamic toll changes to adjust to this volatility, so too does the revenue. Revenue volatility, combined with the limited market experience with Managed Lanes financing, necessitates the use of conservative financing assumptions relative to those that would be employed for a more typical toll road.
While there are many questions yet to be answered about how this project could be financed, a reasonably conservative set of assumptions were developed to provide an indicative range of the potential toll funding contribution. The low and high end assumptions were applied to the Tolled Lanes alternative with Revenue Maximizing pricing and the higher value of time assumption, as this alternative is the only one that would likely be able to support a toll revenue bond financing.

The low and high end financial analysis assumptions shared many of the same assumptions. Both assumed that tolls are the only revenue source pledged to repay debt; there was no additional backing from SANDAG via their taxing authority. Moreover, this was a net revenue pledge such that facility and toll collection operations and maintenance costs must first be paid from gross toll revenues ahead of debt service. However, periodic rehabilitation and replacement (R&R) costs would be paid after debt service from excess toll revenues. Both sets of financial assumptions took the forward looking view that future interest rates will be modestly higher than both current rates as well as the average rates over the past 10 years, while also considering that investor demand for bonds backed by revenues from dynamically priced facilities will improve slightly as more such deals occur. In addition, both assumed that the maximum maturity for the bonds sold will be 30 years, with proceeds available in 2018. A minimum of four and a maximum of five years of capitalized interest were also assumed in both cases. Interest on bonds issued for construction is often “capitalized” whereby some of the bond proceeds are set aside to pay interest costs during construction and/or in the initial years of operation until ramp-up effects have ended and the revenue stream has stabilized.

The low end of the funding range assumed a single tier of senior bonds with maturities of up to 30 years, an average interest cost of 8.0%, and net toll revenues providing coverage of 2.0 times annual debt service (200%). A debt service coverage ratio of 2.0 indicates that the facility is expected to generate annual net toll revenues that are 2.0 times the annual debt payments. This rather high debt service coverage ratio of 2.0 provides greater assurance to the lender that the debtor, SANDAG, will be able to meet their payments. This high debt service coverage ratio is less risky (compared to the low ratio assumed for the high end of the funding range), and accordingly provides a lower amount of funding.

The high end of the funding range also assumed a maximum maturity of 30 years, but added a second tier of subordinated (junior) bonds that bring the aggregate debt service coverage provided by net toll revenues down to 1.6 times annual debt service (160%). In addition, the high end assumed slightly lower interest rates on the senior debt; however the junior debt would have higher interest rates in order to attract investors due to the higher risk of being second in line for repayment. Overall, the average interest cost for the high case was nearly the same as in the low case. The lower debt service coverage ratio of 1.6 is more risky, and thus provides a greater amount of funding.

### 8.4 Financial Capacity Analysis

Based on all of the previously noted assumptions and the preliminary financial analysis, the only Tolled Lanes scenario that would support financing would be Revenue Maximization with the higher value of time assumption. As mentioned above, for simplicity, the scenario with the lower operations and maintenance costs was analyzed. The financial analysis conducted indicates
that this alternative could support a range of up front construction funding of between $50 and $70 million.

The actual amount borrowed in the high case would be about $86 million which yields about $70 million for construction after paying for the cost of issuance and capitalized interest during construction and operations ramp-up.

Only one set of pricing and value of time assumptions could result in a material funding contribution from leveraging Toll Lane revenues and the amount of this capital contribution would be relatively small compared to the overall capital cost of implementation, which is estimated to be between $917 and $1,109 million. Based on this analysis, it does not seem that the selection of the Tolled Lanes alternative would be a way to ensure timely project implementation in the face of a funding shortfall.
9.0 IMPLEMENTATION

The SR 78 Corridor Study is just an initial step in implementing the SR 78 Corridor Project. The project development process contains many phases which will follow the completion of this report. These stages will expand upon the conceptual engineering and impacts analysis done for this study. As part of this, methods for project delivery and potential project phasing will be considered.

9.1 Project Development Process

The Caltrans project development process regulates the development of a project from feasibility studies through project completion. Figure 15 highlights key steps in the process. This process reflects a traditional design-bid-build project delivery; an alternate delivery method may merge or change some of the steps in the process.

Following the completion of the SR 78 Corridor Study, the first step of the process would be the preparation of the Project Study Report (PSR) which would include scoping of the physical work, budget, and schedule to deliver the project. The need and purpose of the project would be defined and the full range of possible project alternatives, including avoidance alternatives, would be identified. The viable alternatives would be studied in detail and documented in the PSR. Caltrans anticipates starting this work for SR 78 in the 2013 fiscal year, which begins July 1, 2012.

The next step would be the preparation of the Draft Project Report (PR), which is an engineering report that describes the scope of the work and considers alternatives. It provides a greater level of detail than the PSR so that areas of potential effects can be identified. This step would occur concurrently with the development of the Environmental Document (ED), which includes environmental studies. The goal of the ED is to find the least environmentally-damaging alternative that fulfills the need and purpose. When the environmental studies are complete, the Draft PR would be finalized and approved and the draft ED would be circulated to the public. After completion of public comments and a public hearing, a preferred alternative would be selected and a final ED would be completed.

Through the PSR, PR and ED processes, a range of issues will be investigated and potential impacts identified. These are anticipated to include:

- Analysis of corridor trip origins and destinations to better understand travel markets which could impact the viability and operations of various alternatives
- Potential modifications to corridor interchanges
- Pricing strategies at freeway-to-freeway junctions
- Operational analysis to identify opportunities for operational improvements and phasing scenarios
- Refined geometric design of SR 78, corridor interchanges and affected frontage roads to determine parcel specific impacts to residents and businesses.

By selecting a preferred alternative, the completion of the PR would authorize project approval. The National Environmental Policy Act and California Environmental Quality Act require review of environmental impacts caused by projects which would likely trigger the need to prepare an Environmental Impact Statement and Environmental Impact Report, respectively. The
environmentally preferred alternative would be identified in a Record of Decision published in the Federal Register.

Following the project approval and selection of a preferred alternative, the project would enter Final Design (preparation of plans, specifications, and estimates (PS&E)). Design details, plans, quantity calculations and contract specifications would be developed. Reevaluation should be conducted to ensure the project remains within the framework of the project approval document. Concurrent with Final Design would be the acquisition of right-of-way and obtaining approvals, agreements, and permits.

Once the design work is complete, the final project documents and bid package would be assembled so the project can be advertised. After bids have been submitted, they would be reviewed, a contractor would be selected, and the construction contract would be awarded. Finally, construction would commence.

![Figure 15: Project Development Process](image)

### 9.2 Project Delivery Methods

At this point in the project development process, it is inappropriate to select a project delivery method. However, multiple methods will be considered for project delivery in future stages of project development, each of which has benefits and drawbacks. These methods are described in the following sections.

**Design-Bid-Build**

Design-Bid-Build is the traditional delivery strategy as outlined in Section 9.1. Caltrans, or engineers acting on their behalf, would develop a complete design and detailed specifications. This design would be put out to contractors for bid with construction being performed by the
lowest bidder. A Request for Qualifications could be used to develop a short list to pre-qualify bidders and ensure that a contractor with a record of proven performance is selected.

This delivery method is well understood by Caltrans, SANDAG, potential design consultants, and the contractor community. Caltrans and SANDAG would maintain full control of the design process through Final Design. However, Caltrans and SANDAG would rely only on a traditional professional services team to provide input during the design phase for constructability reviews, value engineering, cost estimating, and project scheduling. Eventually when a contractor is chosen, their understanding of the design would be based entirely on their review of the construction documents.

**Design-Build**

For the Design-Build approach, Caltrans would complete preliminary engineering and after that a contractor would be selected with responsibility for Final Design and construction. The contractor would assume full responsibility for the Final Design, including any errors and omissions due to their design consultant’s work thereby transferring this risk from Caltrans and SANDAG to the contractor team. The language of the Design-Build contract would define the degree of involvement by Caltrans and SANDAG during the Final Design and construction phases of the project, but in general, their roles are more limited. There would be potential to reduce the project schedule by overlapping some design and construction activities. The designer-contractor team would have an incentive to consider the constructability of the design and look for value engineering opportunities which can reduce the overall project cost. The Final Design schedule and project budget would be optimized and realistic because they would be developed in conjunction with the contractor.

This approach is less common and therefore Caltrans, SANDAG, and other stakeholders are less familiar with it. This could result in decision making and approval delays that may outweigh other schedule benefits. Caltrans and SANDAG would have less control over the project design. Clear definition of scope, design criteria, contract conditions and performance specifications would be essential to ensure later cost increases would not be required and to avoid sacrifices in project quality. While Design-Build has the potential to transfer risk from Caltrans and SANDAG, the benefits would be reduced the more they are involved with the design development.

Additionally, the current legislation that permits Design-Build requires California Transportation Commission (CTC) authorization and sunsets January 1, 2014. The program authorizes a pilot program of the Design-Build method of procurement by local transportation entities for up to five projects and by Caltrans for up to ten projects, subject to authorization by the CTC. As the number of projects allowed under the program is limited, and the SR 78 Project Final Design phase will not likely start by that time, the potential to use the Design-Build strategy is unclear.

**Construction Management/General Contracting**

In the Construction Management/General Contracting (CMGC) or Construction Manager (CM)-at-Risk approach, a contractor is selected to provide both pre-construction and construction services. This allows Caltrans and SANDAG to maintain control over design while gaining valuable input from the construction contractor who will eventually build the job. Selection of the contractor is based on qualifications. Pre-construction work consists of providing input from the perspective of a contractor into the Final Design. This may maximize opportunities for value engineering, constructability review, technical compatibility, as well as contractor-produced cost
and schedule projections. At the end of Final Design, the contractor would offer a guaranteed maximum price for some or all of the construction work based on earlier agreed upon terms. The Final Design engineer would be a separate entity from the contractor.

With this approach, Caltrans and SANDAG would maintain control of Final Design and would establish contract provisions for construction while obtaining some of the benefits of a more integrated project delivery approach. While a contractor would be selected ahead of the traditional bid process, competitive pricing can still be obtained through low bid subcontracts and open-book estimating and contracting between the contractor and Caltrans and SANDAG. Risk of claims could be reduced because of early contractor involvement. A team developed during the design phase could result in a more collaborative working relationship through construction.

Because CMGC pre-selects a contractor ahead of a traditional bid, an exemption from the low-bid process would have to be justified at a public hearing. Similarly, Caltrans and SANDAG may have less leverage with the contractor when pricing construction beyond the CMGC agreement and open-book pricing provisions. If Caltrans and SANDAG were not able to negotiate a guaranteed maximum price with the selected contractor, the project could still be completed under the traditional design-bid-build process.

While CMGC is not a delivery method that is currently being utilized on Caltrans projects, SANDAG and Caltrans both have legislation pending that could make it feasible by the time the project development process for the SR 78 Project progresses to this level.

**Design-Sequencing**

Design-sequencing is a method of contracting that enables the sequencing of design activities to permit each construction phase to commence when design for that phase is complete, instead of requiring design for the entire project to be completed before beginning construction. A construction contract would be awarded when only the initial phase is completely designed and the design for remaining phases is partially complete. Sequencing of design could occur through all three delivery methods previously defined. For Design-Bid-Build, contracts could be let as design is completed. A Design-Build contractor would likely utilize design sequencing. For CMGC, contract packages could be released as design is completed.

This process allows for the successful contractor to work with the designers to incorporate innovative designs and construction methods on the still in-progress phases to improve delivery. With design-sequencing, there would be a potential for earlier delivery of the project to the public.

Caltrans recommends that projects be considered for design sequencing if they have minimal public controversy, have a completed environmental document, an approved project report, right-of-way acquisition complete, utility conflicts identified, and full project funding in place. Design sequencing has been utilized on the I-15 and SR 76 projects in San Diego County.

### 9.3 Project Phasing Strategies

While the SANDAG 2050 RTP includes the implementation of the entire SR 78 Project by 2020 and does not consider phased implementation, project phasing could provide several advantages. Project funding may not all be available at the same time and phasing could allow for some elements or segments to be advanced when only initial funding is in place.
segment or elements of the facility earlier would allow for earlier congestion reduction and earlier revenue collection, which could potentially help fund the construction of remaining segments. While all construction on the corridor will be disruptive, limiting construction to a particular area could help to alleviate impacts. However, constructing the project over a longer period would result in prolonged construction impacts. SANDAG is planning a Managed Lanes network for the region; the I-15 Express Lanes are already in use. By constructing segments that connect to I-15 first, the region’s contiguous Managed Lanes network could be expanded earlier.

**Potential Phasing Strategies**
There are a variety of phasing strategies that could be implemented in the corridor including phasing by segment, by type of improvement, or a hybrid approach. The approach utilized in the corridor will depend on traffic analysis, constructability, and potential funding. These approaches are explained as follows.

**Phasing by Segment**
If the project were phased by segment, one geographical segment of the project would be constructed in advance of other areas in the corridor. This newly finished segment would then be opened while other pieces of the corridor would be undergoing construction. Phasing could be staged rapidly, with the next segment under construction before the previous is open, or spaced out, with breaks in corridor construction between phases. The number and length of phases would vary based on available funding, constructability review, and potential benefit to corridor congestion. This approach is currently being utilized in the region on SR 76. The West segment of that project is complete, the Middle segment is under construction, and the East segment is in Final Design.

In order to identify what segment would be the best candidate for earlier construction on SR 78, current and projected traffic data were analyzed. The Caltrans Performance Measurement System (PeMS) was used to analyze current (2011) average annual daily traffic volumes, which are measured by loop detectors on the freeway. This analysis showed that the highest volumes occur at Barham Drive. Projected corridor volumes for 2020 were also analyzed. The links close to the I-15 have some of the highest volumes for both the AM and PM peak hour. How volumes across the corridor vary indicate natural breaks for phasing.

Based on the 2011 and projected 2020 volumes, potential SR 78 segments for phased construction are listed in order below:

1. I-15 to San Marcos Boulevard
2. San Marcos Boulevard to Melrose Drive
3. Melrose Drive to I-5

The segment from I-15 to San Marcos Boulevard would be a good candidate for early construction because opening this segment for operation would address the higher level of congestion close to the I-15 first.

In addition to traffic conditions, there are operational considerations to take into account with respect to phasing. Starting phasing from the east and moving west would expand the Managed Lanes network earlier, connecting to the I-15/SR 78 HOV Connectors included in the 2020 phase of the 2050 RTP and the existing I-15 Express Lanes. Also, much advanced work has been accomplished, underway or planned to allow the I-15 to San Marcos Boulevard segment
to proceed relatively quickly. This includes the current addition of auxiliary lanes in this segment, the replacement of Nordahl Road Bridge to improve capacity and accommodate future SR 78 widening; the 60% design of the Woodland Parkway interchange; and completion of environmental, preliminary design, and permit processing for SR 78 widening from Twin Oaks Valley Road to San Marcos Boulevard.

If this approach were adopted, the San Marcos Boulevard to Melrose segment would be constructed next, and the Melrose to I-5 segment would be constructed last and would connect to the I-5/SR 78 HOV and freeway connectors included in the 2035 phase of the 2050 RTP. SANDAG and Caltrans are currently investigating potentially advancing the I-5/SR 78 connectors to better align implementation with SR 78, I-5 and Buena Vista Lagoon improvements.

If the phasing of the I-5 Express Lanes and connectors were revised in future RTPs, it could make sense to phase the east and west ends of the corridor first with the final phase connecting the two in the middle. However, with current 2050 RTP phasing this is not feasible as new SR 78 lanes would not have anywhere to connect to once they reach I-5 and could cause additional operational problems.

**Phasing of Improvement Type/By Lanes**

Because the 2050 RTP includes planned operational improvements, and Caltrans has identified additional operational improvements, another potential strategy would be to build auxiliary lanes and implement operational improvements before building the Managed or Tolled Lanes. This would allow for targeted congestion relief while postponing larger potential right-of-way and sensitive environment impacts. An example of this is illustrated in Figure 16. Between Woodland Parkway and Twin Oaks Valley Road there are currently three GP lanes in each direction (Existing in Figure). The final build alternatives include the addition of an Auxiliary Lane and a Managed or Tolled Lane in each direction (Final in Figure). In order to alleviate congestion in the short term, the auxiliary lane could be added with a limited increase in the cross section in this segment (Interim in Figure). The final build out would further expand the cross section and the GP lanes would be shifted outward to accommodate the Managed or Tolled Lane and buffer. Where the former Auxiliary Lane had been located would become a GP lane and a new Auxiliary Lane would need to be constructed.
Figure 16: Woodland Parkway to Twin Oaks Valley Road Conceptual Cross Section

**Hybrid Approach**
A hybrid approach would include the phasing of some parts of the corridor by segment and others by improvement type. A blended approach may best meet constructability, impact minimization and financing requirements. This approach is what is currently being planned for the I-5 North Coast Corridor Managed Lanes project.
10.0 PUBLIC OUTREACH

10.1 Summary of Efforts

SANDAG staff led public outreach efforts to provide information about the project and gather input from the public about the SR 78 Corridor Study. The outreach effort provided an opportunity to gain a local perspective about the study relating to project elements, economic conditions, travel and trip characteristics, or any other observations. It also provided an opportunity to build consensus between residents, public participants, local jurisdictions, business communities, and others beyond the more focused coordination within the Technical Working Group.

The public outreach efforts included community outreach workshops in the cities of San Marcos and Oceanside on March 14 and 15, 2012, respectively. Meeting materials were available in English and Spanish and Spanish speaking staff attended both outreach meetings.

SANDAG staff gave a presentation at the beginning of the meetings followed by an open house format in which attendees could view more detailed boards on specific topics, pick-up fact sheets and other information, and discuss the alternatives with SANDAG, Caltrans, and NCTD staff, as well as the study consultants. The presentation and materials included the following:

- Contextual information, including the 2050 RTP and other corridor projects
- Background and explanation of Managed Lanes and Tolled Lanes facilities
- Concept maps to illustrate the potential improvements
- Project Development Process
- SR 78 Corridor Study Fact Sheet (English/Spanish)

Presentations were also made to the Interagency Technical Working Group on Tribal Transportation Issues, the San Diego North Economic Development Council Public Policy Committee, the SANDAG Transportation Committee, and the Vista Chamber of Commerce Government Affairs Committee. Additionally, SANDAG developed a webpage with information about the study and an online comment tool located at www.sandag.org/sr78study. The SANDAG and Caltrans project-specific website, Keep San Diego Moving (KSDM), was also updated to include a cross reference link to the SANDAG project page.

Public outreach publicity included the aforementioned SANDAG website; notifications on the local jurisdictions and partner agencies’ websites; flyers (in English and Spanish) distributed to stakeholder lists via email by the TWG members; SANDAG, and Caltrans; social media posts; and an advertisement in the North County Times. In addition, The North County Times and San Diego Union Tribune both published articles before the community outreach meetings, identifying the meeting locations and times. The North County Times and NBC Channel 7 provided coverage of the workshop held in San Marcos.

The public comment period was open from early March 2012 to early April 2012. The comments received are summarized in the following section and are included in full, with responses in Appendix D.
10.2 Summary of Comments and Responses

The study received a total of 48 comments through public comment cards collected at the community outreach workshops, comment letters, e-mail, and online comments, with the majority of comments received through the online comment tool. The comments are summarized by topic below.

Support of Managed Lanes Alternative
Several members of the public expressed their support for the Managed Lanes Alternative, citing satisfaction with the I-15 Express Lanes. Most expressed their preference for the Managed Lanes over Tolled Lanes because Managed Lanes allow carpoolers to use the lanes for free. One comment noted the large number of students traveling and carpooling along the corridor.

Widen freeway, add General Purpose lanes
Several comments expressed no support for either alternative, and some commenters suggested widening the freeway to add GP Lanes.

Improve interchanges at I-5 and I-15
Several comments suggested improving the interchange at I-5/SR 78 and moving up the planned delivery of the connector. A few comments discussed the traffic on arterials that occur because of the lack of a ramp to I-5. A couple of comments also suggested widening the I-15/SR 78 connector.

Operational and safety improvements
Several comments suggested operational improvements, such as additional auxiliary lanes and ramp improvements. Some expressed safety concerns over the ramps and interchanges and bottlenecks. A few suggested removing some of the existing ramps or exits.

No widening
Several comments suggested that SR 78 should not be widened because it would increase traffic and pollution. These comments suggested converting an existing GP lane into an HOV lane, improving existing transit service, or improving frontage roads and parallel arterials.

Support of Tolled Lanes Alternative
A few comments expressed support for the Tolled Lanes Alternative. One of these comments noted that there are more solo drivers than carpoolers, which would make Tolled Lanes more effective at alleviating congestion.

Local improvements
Comments were received from the Cities of Vista and Oceanside which encouraged coordination between SR 78 and local improvements going forward.

Several other comments were also received. These regarded the preservation of historic property along the corridor, concerns that the project is a form of double taxation, and that future construction impacts be minimized. Comments that focused on localized impacts or issues will be addressed in the next stages of the project development process.
11.0 CONCLUSION

The primary goal of this study was to evaluate the feasibility of Managed Lanes and Tolled Lanes alternatives. Based on the study analysis, it is recommended that Managed Lanes on SR 78, as identified in the 2050 RTP, be studied further, instead of pursuing the Tolled Lanes alternative. The conclusion of this study is supported by three main avenues that led to the recommendation of an alternative for further study – performance, financial feasibility, and public input. Using the screening criteria matrix developed by the TWG, the Managed Lanes alternative under the Mobility Optimization scenario scored the highest, considering a variety of mobility, environmental, and cost performance measures. The financial feasibility analysis found that revenue from Tolled Lanes could provide only a marginal funding contribution to construction, thus the Tolled Lanes alternative would not ensure timely project implementation in the face of a funding shortfall. In addition, comments received through public outreach efforts indicate a stronger preference for Managed Lanes over Tolled Lanes. Managed Lanes as well as other potential alternatives will be studied by Caltrans as the Project Study Report for the corridor is advanced.

Therefore, the results of this study lead to a recommendation to advance the study of Managed Lanes on SR 78 as defined in the 2050 RTP.
12.0 REFERENCES


California Department of Transportation Performance Measurement System (Caltrans PeMS). 2012. 2011 average daily traffic, level of service, vehicle hours of delay data.


San Diego Association of Governments (SANDAG). 2010. Final 2010 Regional Transportation Improvement Program


U.S. Census Bureau. 2010. City of San Marcos population data.
Appendix A
SR 78 Corridor 2050 Managed and Tolled Lanes Concept Map
Appendix B
Express, Toll, and HOV Lane Definitions
**SR 78 EXPRESS LANES**

### What are Express Lanes?
- Offer transportation choices for commuters
- Carpools, vanpools, transit, emergency vehicles, motorcycles, and some zero-emission vehicles can use the Express Lanes for free
- Solo drivers with a valid FasTrak® account and a FasTrak transponder can choose to pay a toll to use the lanes

![I-15, San Diego County](image1)

![SR 91, Orange & Riverside Counties](image2)

### What are Toll Lanes?
- Provide the option to pay a toll to use faster, more reliable lanes
- Any users with a valid FasTrak account and a FasTrak transponder can pay to use these lanes
- Only transit and emergency vehicles are allowed free use

![SR 125, San Diego County](image3)

![SR 73, Orange County](image4)

### What are HOV Lanes?
- High-occupancy vehicle lanes or carpool lanes
- Each vehicle must carry a minimum number of people
- Usually at least 2 people, or in some cases 3 people
- Motorcycles can also travel in the lanes for free
- Some permitted zero-emission vehicles can travel in the lanes for free

![I-5 (between Manchester Ave. and I-805, San Diego County](image5)

![I-405, Orange County](image6)
Appendix C
SR 78 Standard Cross Section
BUFFER-SEPARATED HOV FACILITY
Appendix D
Public Outreach Comment and Response Matrix
<table>
<thead>
<tr>
<th>Number</th>
<th>Agency</th>
<th>Last Name</th>
<th>First Name</th>
<th>Comment</th>
<th>Response</th>
<th>Comment Format</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Svoboda</td>
<td>K.</td>
<td>Widening the 78 would simply add more traffic. I formerly drove it every day for a work commute. It is congested at times, but the rush hours are generally manageable.</td>
<td>Thanks for your comments.</td>
<td>Online 2/27/2012</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Delgado</td>
<td>Gloria</td>
<td>I have been traveling on SR 78 for 10 Years from Barham to Melrose in the morning and from Melrose to Barham in the afternoon. Traffic is congested going West from Nordahl to Barham in the morning rush hour traffic and East from Rancho Santa Fe to the 15 connector in the afternoon rush hour traffic from 3pm to 6 pm. I have been rear ended twice and spent almost 40 minutes on afternoon traffic to get home from Vista to the Barham exit. Over the years traffic has grown tremendously and so have the accidents. It is difficult to any activities around this time since for me it's impossible to get home in the afternoon. The quality of life of travelers is directly affected by traffic congestion. I had to drop classes from college since I could never make it on time even when leaving work an hour early. I have been e-mailing Caltrans for years and finally it seems that something is being done. There is a project to add an express lane from Woodland to Nordahl, however the traffic begins at Rancho Santa Fe three exits before Woodland. Why are lanes not been added in the needed areas? Those of us who drive on the SR 78 know that traffic lanes need to be added from Rancho Santa Fe to the 15 connector. Usually traffic picks up from Barham to the 15 connector. San Marcos is planning a downtown development which means more traffic will flow on SR 78. A permanent plan needs to be developed to address the real traffic problem areas, something permanent and not temporary is what is needed.</td>
<td>Thank you for your comments. Short-term improvements under construction such as the replacement of the Nordahl Road bridge and auxiliary lanes in the eastbound and westbound direction will provide some relief while the long-term improvements are developed. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
<td>Online 2/28/2012</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>LaBelle</td>
<td>Paul</td>
<td>Neither alternative posted will provide a solution. What is needed is 4 general purpose lanes plus an extra lane for entering and exiting. Merging directly on the freeway, along with signal lights on ramps that do not provide sufficient space to allow vehicles to reach freeway speeds, are the major cause of traffic congestion on the highway. Toll lanes are a double tax as commuters sales tax money through TransNet already provide funding and it discriminates against working families. I am a native of the Highway 78 corridor and my family has lived here for over 45 years.</td>
<td>Thank you for your comments.</td>
<td>Online 2/28/2012</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Orozco</td>
<td>Carmen</td>
<td>It would be great if we could get option #1 which is to use the new lanes as carpool lanes for free. Thanks.</td>
<td>Thank you for your input. The Managed Lane alternative (Alternative 1) will allow persons who carpool to use the new lanes for free.</td>
<td>Online 2/28/2012</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Stafford</td>
<td>Roger</td>
<td>We voted for and approved a bond issue for transportation. Why would we now be subjected to a different proposal for the carpool lanes than are in place for I-15 drivers? Keep it simple and consistent.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including merging analyses.</td>
<td>Online 3/1/2012</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Scott</td>
<td>Nadine</td>
<td>Alternative 1 with free lanes is highly preferred by me. I strenuously object to toll lanes. They are costly to maintain, supervise, and hurt the average person who cannot afford the tolls thereby making them not well used. I drive the 78 at various times of day but the rush hour in the pm is horrible. The other fix needs to be a redesign at the Highway 5/78 connector.</td>
<td>Thank you for your comments on the alternatives evaluated. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Regarding I-5/SR78, Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
<td>Online 3/1/2012</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Stailey</td>
<td>Erik</td>
<td>Please, please do something to improve the westbound 78 to southbound I-5 connector (or lack thereof). It's silly to have an intersection and traffic light in the middle of a very busy freeway interchange. I think improvement of this interchange is the #1 priority for SR 78.</td>
<td>Thank you for your comments. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
<td>Online 3/2/2012</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Svoboda</td>
<td>K.</td>
<td>Widening the 78 would simply add more traffic. I formerly drove it every day for a work commute. It is congested at times, but the rush hours are generally manageable. Putting money into smoothing out the kinks in the frontage roads like Vista Way and other east-west streets seems like a better plan than expanding the 78 itself. The 78 is used a lot for local traffic going one or two exits. Making it a toll road would be a real burden for residents and other such users.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
<td>Online 3/2/2012</td>
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<td>9</td>
<td>Crane</td>
<td>Peggy</td>
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<td>I travel to Escondido several times every month via 78. Since moving to Carlsbad in 2004, it seems like some part of this highway has been under construction constantly. It would be nice to have a finished highway where you don't have to straddle old lanes. The interchange from westbound 78 to southbound I-5 is a nightmare almost all the time. Fix it!</td>
<td>Thank you for your comments. Some operational improvements have been built along the corridor over the years to provide congestion relief. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
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<td>The off-ramp to take 15 south when heading east on 78 needs to have an additional lane and then have barriers so that motorist exiting there do not pile up on the left side of the highway and block motorist trying to go east to Escondido.</td>
<td>Thank you for your comments. Comments received will be provided to Caltrans for consideration in the next stage of the project development process. This will include the PSR/PDS for the SR 78 HOV Connector which is anticipated to begin in summer 2012.</td>
<td>Online</td>
<td>3/2/2012</td>
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<td>11</td>
<td>Robert</td>
<td></td>
<td></td>
<td>I completely support any effort to improve the flow of traffic on SR 78. I love the toll road on I-15 and would love to use the same on 78. Good luck.</td>
<td>Thank you for your input on the alternatives evaluated.</td>
<td>Online</td>
<td>3/3/2012</td>
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<tr>
<td>12</td>
<td>Neff-Sinclair</td>
<td>Jan</td>
<td></td>
<td>I usually commute from the Jefferson exit of 78 to Palomar College, off the Las Posas exit. I see a lot more people traveling solo than in groups, so I think toll lanes might alleviate traffic more than HOV. So would ticketing all the people talking on their cell phones while driving slow and weaving in the left lane.</td>
<td>Thank you for your input on the alternatives evaluated.</td>
<td>Online</td>
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<td>13</td>
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<td>Don't do anything, be patient. Technology is rapidly developing allowing vehicles to be operated without a driver. No need for widened freeways and/or for bullet trains.</td>
<td>Thank you for your input. A No Build alternative was evaluated as part of this study and will be carried forward as the project implementation and environmental clearance processes move forward.</td>
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<td>3/3/2012</td>
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<tr>
<td>14</td>
<td>Brusseau</td>
<td>Scott</td>
<td></td>
<td>Seventy-eight needs to be wider in both directions and the on and off-ramps need to improved.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including ramps.</td>
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<td>15</td>
<td>Feeley</td>
<td>Mike</td>
<td></td>
<td>The 78 from Rancho Santa Fe to the 15 needs to be expanded to 4 lanes in both directions. Unless you are going to have separate connecting bridges at the 15 for HOV, I think it would be better to just increase the lane count and add another connector lane to the 15 south.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. In addition, a PSR/PDS for the SR 78 HOV Connector is also anticipated to begin in summer 2012.</td>
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<td>16</td>
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<td>This freeway is very curvy compared to others. It makes it nice to drive, but probably slows the traffic. Straighten it out where possible, rather than add lanes. Fixing bottlenecks at either end (15 and 5) and major intersections (El Camino Real, Nordahl) is better than widening into our neighborhoods.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 and the PSR/PDS for the SR 78 HOV Connector, which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including operational improvements, and interchanges. In addition, Caltrans has a PSR in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
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<td>17</td>
<td>Brubaker Joan</td>
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<td>Highway 78 is a major corridor for the communities of Oceanside, Vista, and unfortunately for Temecula and Riverside. Many of the motorists are employed in professions in San Diego or Carlsbad and as a consequence the roadway provides a mode of travel for them to make a living. Toll roads seem to be a coming method of providing a more direct and efficient route of going to the destinations motorists are seeking. For that reason this suggestion does not surprise me at all. What happened to the funds we submit every time we buy petrol?</td>
<td>Thanks for your input. It is assumed that approximately 50 percent of the project cost will be funded with local TransNet funds. In addition, per the fiscal year ending June 30, 2010, the California Streets and Roads Annual Report indicates that the majority of gas tax funds were expended towards local roadways as follows; construction and right-of-way, maintenance, and engineering and administration.</td>
<td>3/6/2012</td>
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<td>18</td>
<td>Reed Tammy</td>
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<td>The new lanes should not be toll or HOV! Why give us only two alternatives? We are paying for them. We all pay taxes so the new lanes should be lanes every person and every vehicle can use at all times! They should not be a new stream of revenue, such as the HOV lanes on the I-15. Those lanes could have added 3-4 lanes in each direction that everyone could use. Instead solo drivers paid taxes to have it built, and then have to pay a fee to use it.</td>
<td>Thank you for your comments on the alternatives evaluated.</td>
<td>3/6/2012</td>
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<td>19</td>
<td>Crawford Kim</td>
<td></td>
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<td>The only thing that 78 needs is more lanes for everyone. Not just car poolers or people that want to pay extra. The 78 needed more lanes right after the first expansion around 20 years ago? Just a wider freeway would be nice. And redo the transition ramps from the 78 to the 5 and 5 to 78.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
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<td>20</td>
<td>Hamilton John</td>
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<td>Highway 78 should have been four lanes each direction last time it was expanded. The last expansion took way to many years to complete, it seemed like it was at least 10 years from start of expansion to finish.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. The SR 78 corridor is physically constrained with adjacent sensitive lands and commercial development. The SR 78 Project Study Report (PSR), which is anticipated to begin in summer 2012, will consider constraints such as limited right-of-way, sensitive environments, and commercial development. Construction phasing will be also be examined in future stages of the project development process.</td>
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<td>21</td>
<td>Crawford Kim</td>
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<td>I am 100 percent against the new lanes becoming toll lanes. I think people should be rewarded for carpooling therefore the new lanes should provide the incentive to travel together not charge people for using the highway. If the new lanes would be toll lanes then the other lanes will be even more congested because people will want to pay to drive to their destination. Look at the price of gas, I think we are paying enough in taxes to drive our cars as it is. Thank you very much!</td>
<td>Thank you for your comments on the alternatives evaluated.</td>
<td>3/12/2012</td>
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<td>22</td>
<td>Hamilton John</td>
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<td>Of the two alternatives, alternative 1 seems the more likely to be successful. From my observations traveling SR 78 for over four years, there is a significant amount of traffic generated from students commuting to the various colleges (compare the ADT during peak-hour times during July and October or February!). I have noticed a number of students carpooling, so given the costs of attending college (e.g., tuition, etc.) plus the cost of commuting (e.g., gas), there would likely be more use of alternative 1, which would hopefully reduce the tremendous congestion we all face traveling SR 78.</td>
<td>Thank you for your comments on the alternatives evaluated.</td>
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<td>23</td>
<td>Blum Ken</td>
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<td>I prefer alternative #1 as it provides an incentive for carpooling. With alternative #2 there is no reward for carpooling.</td>
<td>Thank you for your input on the alternatives evaluated.</td>
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<td>24</td>
<td>Anonymous</td>
<td></td>
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<td>Corridor needs more operational improvements. If an option of either express lanes or toll, express lanes would be more favorable to give dual riders that option. And for a single commuter, they may have that option to purchase a FasTrak.</td>
<td>Thank you for your comments on the alternatives evaluated. Short-term improvements under construction such as the replacement of the Nordahl Road bridge and auxiliary lanes in the eastbound and westbound direction will provide some relief while the long-term improvements are developed.</td>
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<td>25</td>
<td>Sweet Ellen</td>
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<td>Any changes to the eastbound lanes of SR 78 between El Camino Real and College Blvd must not impact the Marron Adobe and its surrounding cultural and archaeological sites which have qualified for the National Register of Historic Places. This historic adobe has already had too many impacts on it.</td>
<td>Thank you for your comments. The project must comply with Section 106 of the National Historic Preservation Act and California Public Resources Code 5024. Cultural and archaeological analyses will be conducted during the environmental clearance process.</td>
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<td>26</td>
<td>Kloss</td>
<td>Carl</td>
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<td>The 78 was okay in the 1980s. For 2012, it is sorely lacking and it needs 4 lanes and the interchange at the 5 should not have a signal. Fix it ASAP, please. The work at Nordahl is in the right direction.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. ADD CT ANALYSIS OF I-5/SR 78 IC. In addition, Caltrans has a PSR in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
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<td>Please do not expand the 78. More traffic equals more pollution. As a resident who lives near the 78, expansion is bad for the community who lives here. When you plan for more cars, you are going to get more cars. How about improving public transit modes that already exist and are underutilized, such as the SPRINTER? Be creative, be resourceful, the easy &quot;solution&quot; is to build more lanes, instead, do something that will not harm the community.</td>
<td>Thank you for your comments. The SR 78 Corridor Study included double-tracking the SPRINTER corridor for both regular and express service, Rapid Bus, increased local bus service headways, and streetcar improvements consistent with the 2050 RTP. In addition, interim express bus service prior to the SPRINTER double-tracking and college transit serving major colleges were also examined.</td>
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<td>28</td>
<td>Jungers</td>
<td>Mary</td>
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<td>I live one block west of the 78/I-5 interchange, on the southwest corner of Vista Way and Stewart Street. There are only 8 homes on our cul-de-sac, but every month we have over 3,000 vehicles from the freeway turning around on our street to get back to the freeway. These vehicles are trying to avoid sitting at the stop light and/or multiple daily back ups on westbound 78 to go south on I-5. This count is documented in a study done by the city of Oceanside. We have serious safety issues on our cul-de-sac due to this freeway traffic. How will this be addressed in the proposed changes? We also get traffic from a park and ride that has no safe, direct access to the freeway, so the drivers come onto our street to turn around...to get back to the freeway. Caltrans and the City of Oceanside are attempting to remedy this but are not optimistic. How will this be addressed in the proposed changes? Our family has been on this corner for 50 years and have tolerated this problem since the stop light was put in place at 78 and I-5. It’s time for governing bodies to focus on this decades old problem, and address 78/I-5 before you add more lanes that put more traffic on an interchange that is already dysfunctional. Please direct me to the point person focusing on this section of the project.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
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<td>29</td>
<td>Farrell</td>
<td>Sandra</td>
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<td>In San Marcos there are too many on and off-ramps which reduce capacity of SR 78. Because the off-ramps are so numerous and so close together the far right-hand lane becomes just an extension of an off/on-ramp causing the lane adjacent to it to slow down and function as a merge lane. This in turn makes only one lane, the fast lane to the far left able to travel at freeway speeds. This situation is worst during peak traffic times and made worse by having two colleges so close together.</td>
<td>Thank you for your comments on the spacing of ramps. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
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<td>30</td>
<td>Farrell</td>
<td>Sandra</td>
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<td>The off-ramps at Las Posas and Twin Oaks Valley road heading east are especially dangerous. This is due to the fact so many cars are trying to merge on at San Marcos Blvd and Rancho Santa Fe. In addition the Las Posas intersection is a real mess. People trying to get to Palomar College back the Las Posas traffic up to Grand and the location of the SPRINTER crossing is so close to the Las Posas off-ramp and Mission that people sometimes find themselves on the tracks when the SPRINTER is approaching. Either the train or the freeway needs to move so that there is more space for this amount of traffic.</td>
<td>Thank you for your comments on the configuration of ramps. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
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<td>31</td>
<td>Farrell</td>
<td>Sandra</td>
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<td>More about the Las Posas interchange. There are areas where people don’t know if they are getting on to go east or west because the eastbound off-ramp onto Grand and the eastbound on-ramp are too close together.</td>
<td>Thank you for your comments on the Las Posas interchange. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
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<td>32</td>
<td>Farrell</td>
<td>Sandra</td>
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<td>With the improvements to I-15 at SR 78 cars can now travel faster and need to stop quicker heading northbound and trying to transition to the SR 78, Cars heading northbound from Valley Parkway have to fight to get out into the traffic heading north on I-15 at the same time cars are trying to beat the line up of those trying to transition from I-15 to SR 78 west. It is a mess!</td>
<td>Thank you for your comments on the SR 78/I-15 transitions. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 and PSR/PDS for the I-15/SR 78 HOV connectors, which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.</td>
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<tr>
<td>33</td>
<td>Farrell</td>
<td>Sandra</td>
<td></td>
<td>I use many of the off and on-ramps along the SR 78 corridor and those in San Marcos are the worst.</td>
<td>Thank you for your comments on ramps along the corridor. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of ramps.</td>
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<td>34</td>
<td>Garcia</td>
<td>Noelia</td>
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<td>I attended the meeting at San Marcos city hall on March 14, 2012. This meeting was to improve transportation. The improvement of Route 78 is a very good thing because by doing this you guys will be minimizing the traffic congestion during the morning and afternoon for all those people trying to get home to their families. I thought it was very interesting and that it is a very good idea. Traffic is a problem and I thank you and your team for trying to make things better for everyone. I know that you guys are at the first step right now, but I know that when you guys are done with this project it is going to be very helpful to everyone that has to sit there stuck in that traffic. I thank the California Department of Transportation (Caltrans), the San Diego Association of Governments (SANDAG) and the cities of Escondido and San Marcos for working together to make this improvement for the rest of us to use. I also know that this project is fully funded through federal grants provided to the cities of Escondido and San Marcos. I thank you guys one more time because with this project you guys are going to make a lot of people’s lives easier to get to and from work or where ever they are headed to.</td>
<td>Thank you for your input and kind words.</td>
<td>Letter</td>
<td>3/15/2012</td>
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| 35     | Knott  | James     |            | 1) No toll - Prejudice against low income seniors and families  
2) Instead of widening 78 improve Vista Way and other arterials to take loads off of freeway - the freeway was done to remove loads off of these roads now most of the time few people use these roads, you can be backed up in traffic on 78 yet see cars zipping along on Vista Way  
3) Consider K-rail movable HOV lanes instead of dual lanes each side and design future improvements  
4) Protect historical and natural American sites like the Manor Adobe and other sites  
5) Consider enhanced amenities like a greenbelt and informational signage  
6) Keep electronic bill boards off the route  
7) Fix 78 and Vista Way at Coast Highway Oceanside, and I-5 homeowners need your assistance  
8) On Rancho Del Oro, use the College Boulevard example on/off on north side and route to College to go opposite direction | Thank you for your detailed comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. | Oceanside Workshop Comment Card | 3/15/2012 |
<p>| 36     | Anonymous |        |            | I believe that the Route 78 project should be a priority within San Diego County. I would propose that the interchange between I-5 and Route 78 be moved up in the schedule and that this particular portion of the Route 78 corridor needs the most attention. I am in favor of alternative 1 and it is a viable project for design-build. | Thank you for your input on the alternatives evaluated. Regarding the I-5/SR 78 interchange, Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time. | Oceanside Workshop Comment Card | 3/15/2012 |
| 37     | Anonymous |        |            | Propose to tackle the toll lane alternative as one, complete project. Fast track the job for completion in a 5 year window with a 25 - 30 year concession, at which point the toll lanes would revert to HOV/Express. Could be done for $750 million or less. Design-build-operate-transfer. | Thank you for your input on the alternatives evaluated. | Oceanside Workshop Comment Card | 3/15/2012 |
| 38     | Sam     |            |            | If you put a carpool lane in instead of widening it that would be nice. | Thank you for your input on the alternatives evaluated. | Oceanside Workshop Comment Card | 3/15/2012 |</p>
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<tr>
<td>39</td>
<td>McKinley</td>
<td>David</td>
<td></td>
<td>To increase capacity of SR 78, simply add two standard traffic lanes, one in each direction for the length of the freeway. Do not build HOV lanes or any other type of controlled access lanes. Such lanes are unsafe, expensive to build, take up more space, and are not effective at reducing cars on the road. Don't even consider lanes that solo drivers must pay to use. E-mail when the study is posted online.</td>
<td>Thanks for your input. The SR 78 Corridor Study focused on analysis of Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements.</td>
<td>Online Workshop Comment Card</td>
<td>3/15/2012</td>
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<tr>
<td>40</td>
<td>Bockman</td>
<td>Joan</td>
<td></td>
<td>Freeway 880 or 680 sorry don't remember number, between San Jose and Oakland, is full of pot holes and still they have no trouble following signs that say &quot;carpool lane 7-9am 3-5pm&quot; or something like that. The only change I want to see for both 78 and 5 is diamond lanes on #1 and #2 with those signs. No construction, no idiot proofing. We can do it.</td>
<td>Thanks for your input on the alternatives evaluated, including peak period express lanes.</td>
<td>Online Workshop Comment Card</td>
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<td>41</td>
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<td></td>
<td>Something needs to be done about the transition from the I-5 to the 78 in both directions.</td>
<td>Thanks for your input, Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
<td>Online</td>
<td>3/19/2012</td>
</tr>
<tr>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td>I would like to see the Las Flores exit closed.</td>
<td>Thanks for your input on the Las Flores interchange. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.</td>
<td>Online</td>
<td>3/19/2012</td>
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<tr>
<td>43</td>
<td>Jungers</td>
<td>Mary</td>
<td></td>
<td>I live on the southwest corner of Vista Way and Stewart Street. All day, every day, I watch literally hundreds of vehicles abandon waiting at the interchange stop light to go south on 5 from west 78. It is documented by the City of Oceanside that our street, south Stewart Street, gets 3,000 vehicles a month, all turning around to go back to the freeway. There are only 8 residences on our street! But we have to handle 3,000 vehicles from the freeway. I just watched 13 vehicles in 6 minutes come off the interchange and turn around within the first block west of the interchange. Three of them came blazing onto our cul-de-sac, whipped around in the middle of the street and raced back to go south on 5. Others turned in the middle of heavy traffic on Vista Way causing near accidents, and horns to blast. This is in 8 minutes, at 8:15 in the morning and it does not let up...all day, every day, for decades. I would like to speak with someone who can offer reassurances - proof - that this problem is going to be addressed in the upcoming widening of 78. Another westbound lane means more traffic in our neighborhood unless it is handled properly. Please fix this dysfunctional interchange and take the freeway's 3,000 vehicles off of our cul-de-sac.</td>
<td>The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements, including analyses of interchanges.</td>
<td>E-mail</td>
<td>3/23/2012</td>
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<tr>
<td>44</td>
<td>Jungers</td>
<td>Mary</td>
<td></td>
<td>Thank you to all for your attention to this decades old problem. My family has been in this home since the early 60's and have tolerated the traffic longer than anyone should reasonably expect us to. Our entire neighborhood has been turned into one long freeway ramp. We acknowledge that we live on a major artery but view Vista Way as a gateway to South Oceanside, not a ramp to the 78 and 5. We know Vista Way will always carry traffic. But it should be residential traffic, not thousands of freeway drivers angry about sitting at a stop light. The fact that there are over 3000 freeway vehicles a month turning around on a 8-home cul-de-sac should be proof enough that changed are required. And that number does not reflect the majority of freeway vehicles turning in the middle of Vista Way or in the Hunter restaurant parking lot.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
<td>E-mail</td>
<td>3/27/2012</td>
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### SR 78 Corridor Study Public Outreach - Comments and Responses

<table>
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<tr>
<th>Number</th>
<th>Agency</th>
<th>Last Name</th>
<th>First Name</th>
<th>Comment</th>
<th>Response</th>
<th>Comment Format</th>
<th>Date</th>
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<tr>
<td>45</td>
<td>City of Vista</td>
<td></td>
<td></td>
<td>We have been in the environmental clearance and design stages to widen W. Vista from its current substandard design to a 4-lane road in accordance with our adopted Circulation Element. In light of the planned SR-78 widening project and the probable impacts to adjacent frontage roads, we will only proceed with work currently authorized under the federal grant for the project (preliminary engineering, which includes final design and environmental documentation). We also have local funds programmed to construct phase 1 of the project between Emerald Drive and Grapevine Road. Since the proposed SR 78 widening is likely to have significant impacts on W. Vista Way and since it is a regional arterial, we would like to request that upgrading W. Vista Way to a 4-lane road be included as part of the SR-78 widening project.</td>
<td>The Corridor Study includes a planning level cost estimate for the project, which includes the cost of relocating existing frontage road facilities that would be impacted by the SR 78 widening project. The cost estimate includes replacement of frontage roads in their existing configuration, not as wider facilities. An upgraded 4 lane W. Vista Way is not currently included in the cost estimate prepared for the Study. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. As this project moves into this next project development phase, there may be an opportunity to further examine the future widening of W. Vista Way as it relates to the overall SR 78 corridor project. SANDAG will be providing all materials from the Corridor Study to the Caltrans PSR project staff.</td>
<td>E-mail</td>
<td>4/2/2012</td>
</tr>
<tr>
<td>46</td>
<td>Jungers Mary A</td>
<td></td>
<td></td>
<td>A highway patrol officer just turned around in my drive. Of course he had to wait for 3 other vehicles to complete their turns first. When I asked him how he happened to come to our street - that we have a serious problem with freeway traffic - the officer informed me that there was no place else to turn around and as long as this is a public street in doesn't matter that 3,000+ vehicles are using it for the same reason. A model civil servant. Yes it is a public street but I have a right to expect the same reasonable traffic flow that other residential streets experience. That is not the case and will not be until you do something about the interchange at 78 and 5. And, further information - for every one car turning around on my street - at least 5 have turned around in the Hunter parking lot. Please do the math - thousands of freeway-bound vehicles in our neighborhood - continuously - for decades.......when is it our turn for improvements that will fix this problem?</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements. Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time.</td>
<td>E-mail</td>
<td>4/5/2012</td>
</tr>
<tr>
<td>47</td>
<td>Walker Tory I-5/SR 78 freeway connectors must be given priority over less needful (but politically driven) projects in southern parts of the County. Use some of the $800 million that was just directed away from North County to South County</td>
<td>Caltrans has a Project Study Report in progress to develop alternatives for the I-5/SR 78 connectors. The study is anticipated to be completed in summer 2012 and will be available for review at that time. The 2050 RTP includes $106 million for the I-5/SR 78 freeway connectors and $240 million for the I-5/SR 78 HOV connectors in 2010 dollars. The SR 78/I-15 connectors are proposed to be built in an earlier phase to align with the already completed Express Lanes on I-15.</td>
<td>Vista Chamber of Commerce Comment Card</td>
<td>4/5/2012</td>
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<tr>
<td>48</td>
<td>City of Oceanside</td>
<td></td>
<td></td>
<td>The City of Oceanside would like to see the SR 78 eastbound off ramp at College Avenue realigned to connect into Haymar Drive opposite Plaza Drive at College Boulevard.</td>
<td>Thank you for your comments. The SR 78 Corridor Study provides a planning-level analysis of the Express Lane and Toll Lane alternatives. Comments received will be provided to Caltrans for consideration in the next stage of the project development process, the Project Study Report (PSR) for SR 78 which is anticipated to begin in summer 2012. The SR 78 PSR will provide more detailed analysis regarding project alternatives and improvements</td>
<td>E-mail</td>
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INTEGRATING TRANSPORTATION DEMAND MANAGEMENT INTO THE PLANNING AND DEVELOPMENT PROCESS – A REFERENCE FOR CITIES

Introduction

Transportation Demand Management (TDM) refers to a variety of strategies that change travel behavior (how, when, and where people travel) in order to improve transportation system efficiency and enhance mobility. Typical TDM programs reduce single occupant vehicle (SOV) trips through ridesharing initiatives such as carpooling and vanpooling; alternative work schedules and teleworking; and the use of transit, biking, and walking to work. TDM plays a critical role in achieving regional greenhouse gas (GHG) emissions to state-mandated levels per California Senate Bill 375 and is a key component of the 2050 Regional Transportation Plan (RTP) and its Sustainable Communities Strategy.

The SANDAG iCommute program manages regional TDM initiatives that provide transportation alternatives to the SOV and reduce peak-period congestion. However, the success of TDM programs relies heavily on decisions made by local governments regarding land use, urban design, and parking, all of which are essential in influencing travel choice and demand. Understanding the important role of local governments in TDM planning and implementation, iCommute has developed a study titled Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities. This study will provide SANDAG member agencies (policy makers, planners, traffic engineers, and land development proposal reviewers) with:

- Case studies and a review of existing resources for integrating TDM throughout the various land development stages from long-range planning to site development; and
- Recommendations for managing, monitoring, and evaluating the effectiveness of TDM strategies.

In March 2012 staff provided an overview of the proposed framework of the study to both the Cities/County Transportation Advisory Committee and the Regional Planning Technical Working Group. The feedback provided by working group members was incorporated into the draft study. The draft was presented to the same working groups as well as the San Diego Regional Traffic Engineers' Council for review and discussion at its April meeting. A final draft that addressed all comments received was provided to the working groups at their May meetings for recommendation.

Recommendation

The Transportation Committee is asked to accept Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities as an additional resource in the Smart Growth Tool Box.
to the Transportation Committee for acceptance as an additional resource in the SANDAG Smart Growth Tool Box. A description of the contents of the SANDAG Smart Growth Tool Box is in Attachment 1 on pages 40 and 41. The study also was presented to the Regional Planning Committee for information at its May meeting.

Discussion

TDM strategies address key regional policy objectives related to quality of travel, livability, and sustainability. At the regional level, the SANDAG iCommute program coordinates a number of programs that increase the number of people who carpool, vanpool, use transit, bike, and walk to work, as well as support for telework and alternative work schedules. However, for TDM to be truly effective, it must be supported at the local level with land use policies and neighborhood design that reduce the need to drive for daily tasks.

Including TDM in the municipal planning and development process offers a broad range of economic, environmental, and public health benefits for local governments and their constituents:

- TDM is a cost-effective way to build capacity in a community’s transportation system by expanding participation in alternative modes (carpools, vanpools, transit, biking, walking, and teleworking) instead of widening or building new roads, which are costly to construct and maintain.
- TDM incorporated into development reduces auto trips and lowers the cost and burden for jurisdictions and developers to provide more parking capacity.
- TDM improves air quality by encouraging alternatives to the SOV, reducing congestion, and corresponding vehicle related emissions.
- TDM saves money for employers and employees. Transit subsidies can be deducted as a business expense and when transit costs are removed from paychecks before taxes are applied, employers save on payroll taxes.
- TDM is adaptable and dynamic. It can be customized for specific events, neighborhoods, corridors, work sites, and time frames. Unlike new infrastructure, TDM programs can easily respond to economic and population changes.

Study Framework

Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities covers three primary areas. The first section focuses on TDM in the planning process and identifies specific opportunities for local governments to incorporate TDM into all stages and types of plans. The second section focuses on implementing TDM plans through the development process and provides an overview of the specific development and parking policies that promote the TDM goals laid out in the planning process. The final section provides information on managing and monitoring the performance of TDM programs. Each section provides case studies, sample policies, references, and resources.
**Next Steps**

With the acceptance of this study by the Transportation Committee, the study will be distributed in print form and electronically through the SANDAG Web site for use by local agencies and transportation professionals as a resource in the SANDAG Smart Growth Tool Box and as a resource for the Regional Intergovernmental Review process.

DAN MARTIN  
Principal iCommute

Attachment: 1. Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities (Final Draft)

Key Staff Contact: Antoinette Meier, (619) 699-7381, Antoinette.Meier@sandag.org
Integrating Transportation Demand Management Into the Planning and Development Process

a reference for cities

prepared in partnership with HNTB
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1. Transportation Demand Management (TDM) and San Diego Region Jurisdictions

The San Diego region has grown rapidly over the last 40 years with a population increase of nearly 60 percent. According to the 2050 Regional Growth Forecast, the population will continue to grow by an additional 33 percent reaching 4.4 million residents in the next 40 years. Meeting the transportation needs of this growing population requires a comprehensive and multimodal approach. Some solutions include capital projects like new rail infrastructure, High Occupancy Vehicle (HOV) lanes, managed lanes, and bicycle network improvements. Other solutions include enhanced or increased public transit services such as Bus Rapid Transit, trolley, and commuter rail. While these projects require considerable time and resources to plan and implement, programs and services that reduce or manage travel demand (Transportation Demand Management or TDM) are cost effective, flexible, and can be executed in shorter time frames. While TDM will not eliminate the need for new transportation infrastructure or services, it does contribute to the effective and efficient use of the region’s transportation infrastructure.

Defining TDM: TDM refers to a variety of strategies that change travel behavior (how, when, and where people travel) in order to improve transportation system efficiency and achieve key regional objectives, such as reduced traffic congestion, increased safety and mobility, and energy conservation and emission reductions (Victoria Transport Policy Institute). Typical TDM programs reduce Single Occupant Vehicle (SOV) trips through ridesharing initiatives such as carpooling and vanpooling; alternative work schedules and teleworking; and the use of transit, biking, and walking to work. However, TDM strategies should not be limited to just commute trips. TDM strategies, programs, and plans are most effective when considered for all trips and at all geographic levels--from a specific site, to a neighborhood, city, and regional or state levels – creating a comprehensive and coordinated approach.

TDM is a key component of the San Diego 2050 Regional Transportation Plan (2050 RTP) and its Sustainable Communities Strategy (SCS) as a way to ease traffic congestion and reduce air pollution, while improving the commute for thousands of San Diego region residents. TDM programs play a critical role in achieving regional Greenhouse Gas (GHG) emissions to state-mandated levels and are incorporated into SCS, a required element of the 2050 RTP, per California Senate Bill 375. The SCS details how integrated land use and transportation planning will lead to lower GHG emissions and a more sustainable future for the San Diego region.

iCommute is the TDM program for the San Diego region. iCommute programs encourage and incentivize sustainable transportation choices by providing free online ridematching services, a regional vanpool program, transit support, bicycle encouragement programs, the Guaranteed Ride Home program, and SchoolPool. Participation by commuters and employers in TDM programs is voluntary in the San Diego region. In the early 1990s, TDM regulations in the San Diego region required employer trip reduction plans. These regulations were enacted when the federal government designated the region’s air quality as “severe.” In 1995, the federal government re-classified the region’s air quality designation from “severe” to “serious,” and the TDM regulations were rescinded.

In a voluntary environment, commuters base their travel choices on a desire to save time and money, reduce stress, improve the environment and their health, and other considerations. Employers offer TDM benefits that are easy to
implement and make business sense by helping to attract and retain employees and reduce overhead costs. Without regulatory tools, the iCommute TDM strategy is to address these personal and business motivations with targeted outreach, education and public awareness campaigns combined with the resources and incentives needed to change travel behavior.

iCommute’s partnerships with employers have proven to be the most effective method for promoting alternative travel choices among the region’s commuters. This is partly because TDM programs can be tailored to the transportation needs of employees at their specific place of work. iCommute’s initial outreach and education efforts have focused on the region’s largest employers and they have partnered with over 170 employers to promote TDM and develop customized commute programs that meet employer and employee needs. To further assist employers, iCommute developed a comprehensive Commuter Benefit Program Starter Kit that outlines a simple, three-step process to help employers identify their commute needs, design a custom program, and roll it out to their employees. The kit includes sample policies, forms, tax deduction information, commuter program descriptions, and examples of best practices from other companies and agencies. It also includes advice and sample materials for how to market a commuter program to employees. iCommute staff is available to works one-on-one with employers to provide the technical assistance they may need, such as surveying for employee travel preferences, mapping employee commute routes, and developing a customized plan that makes business sense. These employer resources are envisioned to work together with the TDM strategies that are presented in this reference study.

Role of Local Governments in TDM: Local governments play a critical role in TDM planning and implementation. Land use, urban design, and parking policies are all under the jurisdiction of local governments and are essential in influencing travel choice and demand. Efficient land use and urban design can reduce the need for auto travel for daily trips, and appropriate parking supply and pricing can encourage the use of alternative modes of transportation.

Local jurisdictions in the San Diego region are in a unique position to implement a broad range of TDM strategies at many different points in the development process. While the state and region can enact legislation and set broad policies, local governments have the ability to guide the implementation of TDM strategies through the planning process using short and long-range plans, and can implement TDM strategies through development agreements, zoning, policies, and ordinances.

Jurisdictions are becoming increasingly aware of the link between travel choices and land use patterns and policies. They are recognizing that an individual traveler’s mode choice - be it auto, carpool, vanpool, transit, walking, or biking - is significantly influenced by how communities are designed and developed. As such, the following chapters identify how TDM strategies can be proactively incorporated into the planning and land development process, influencing localized land use patterns and site development to better manage and reduce auto travel demand and particularly SOV travel. The study also outlines and gives examples of supportive policies that encourage non-SOV trips through the development process.

To support TDM goals laid out in the 2050 RTP and SCS, iCommute has developed this guidance to provide SANDAG member agencies (policy makers, planners, traffic engineers, and land development proposal reviewers) with:

- Case studies and resources for integrating TDM throughout the various land development stages from long-range planning to site development
- Recommendations for managing, monitoring, and evaluating the effectiveness of TDM strategies

This guide will define the value of TDM programs, describe how TDM can be integrated into many jurisdictional plans, identify how a wide range of strategies can be applied at different stages of the development process, and discuss the
According to the 2008 Seattle Urban Mobility Plan (City of Seattle Department of Transportation), the City of Bellevue, WA was able to reduce the drive alone commute rate in downtown Bellevue by 30 percent between 1990 and 2000, due to their implementation of TDM strategies as required by the State’s Commute Trip Reduction Act (Washington State Department of Transportation).

2. Why TDM?

TDM strategies address key regional policy objectives related to quality of travel, livability, and sustainability. At the regional level, the SANDAG iCommute program coordinates a number of programs that increase the number of people who carpool, vanpool, use transit, bike, and walk to work, as well as providing information on telework and alternative work schedules. However, for TDM to be truly effective, it must be supported by land use policies and neighborhood design that reduce the need to drive for daily tasks. Including TDM in the municipal planning and development process offers a broad range of economic, environmental, and public health benefits to local governments, their citizens and businesses:

**TDM maximizes returns on infrastructure spending and reduces the need for new or widened roads** – TDM is a cost-effective way to build capacity in a community's transportation system by expanding participation in alternative modes (carpools, vanpools, transit, biking, walking, and teleworking) instead of widening or building new roads, which are costly to construct and maintain.

**TDM reduces parking demand** – TDM incorporated into development reduces SOV auto trips and the need for parking, reducing the cost and burden for jurisdictions and developers to provide more parking capacity.

**TDM helps to meet environmental and air quality goals** - TDM improves air quality by encouraging alternatives to the SOV, reducing congestion, and corresponding vehicle related emissions. TDM can help to preserve green space by reducing the amount of land needed for roads and parking facilities. TDM can reduce storm water management costs by encouraging more efficient land use patterns (Victoria Transport Policy Institute).

**TDM is adaptable and dynamic** – TDM can be customized for specific events, neighborhoods, corridors, work sites, and time frames. Unlike new infrastructure, TDM programs can easily adapt and respond to economic and population changes.

**TDM provides benefits to the public:**

- **Reduced costs for commuters.** TDM is not only cost effective for local governments but access to low-cost commuting alternatives can cut individual transportation costs by half or more. A 2011 report issued by the U.S. Census Bureau estimates that individuals who ride public transportation in urban areas can save on average $778 per month (U.S. Census Bureau). Financial incentives for ridesharing are available to reduce costs through

---

1 Based on the national average gas and parking rates in June 2010.
the SANDAG iCommute program, and employers are allowed to offer payroll tax savings for transportation assistance up to $135 a month per employee for transit passes or vanpool vouchers.

- **Reduced costs for businesses.** Pre-tax programs offer savings to employers as well as employees. Transit subsidies can be deducted as a business expense. When funds are removed from paychecks before taxes are applied, employers save on payroll taxes.

- **Saves time.** Carpools and vanpools can get commuters to work and back faster than driving alone by using HOV lanes and HOV bypass facilities.

- **Improves public health.** Biking or walking to work or transit increases physical activity, and reduced vehicle emissions improve air quality.

- **Benefits employers and employees.** Research demonstrates that adding commuter benefits to employees’ compensation is a low-cost benefit that can help to attract and retain employees, and increase employee productivity. TDM can reduce employer overhead costs too. Teleworking and alternative work schedules reduce office space requirements and parking demand, and many companies are finding that it costs less to pay employees not to drive than it does to provide them with free or cheap parking spaces. Offering cash to employees who choose not to drive alone to work can amount to significant reductions in parking acquisition and maintenance costs.

- **Encourages sustainable development.** TDM contributes to Leadership in Environmental and Energy Design (LEED) certification.

- **TDM increases safety.** Reduced traffic congestion and complete streets can make roadways safer for all users, including bicyclists and pedestrians.
3. How TDM Fits into the Local Planning Process

While SANDAG provides the regional framework to connect our land use to our transportation system, local governments regulate land use, development, and parking— all of which are key factors in determining travel choice. The planning and development processes are key points at which TDM can be introduced – influencing how people travel to and from a new development from the day it opens (European Platform on Mobility Management). Therefore maximum benefits are achieved when both transportation efficient development (mixed use development that supports the use of alternative modes) and TDM strategies are planned and implemented comprehensively at the local level.

Broad TDM policies and goals are sometimes included in a local government’s long-range transportation plans, but TDM is not generally integrated throughout the local planning process and comprehensive implementation of TDM strategies can fall short of desired outcomes. This section will identify opportunities for local governments to incorporate TDM into all stages of the planning process with case studies from around the world, highlighted throughout. These experiences will help illustrate how a multi-layered approach to planning provides the largest impact. For example, general plans that encourage transit oriented development patterns and bicycle networks are best supported by design guidelines that require pedestrian consideration at intersections and parking policies that minimize free parking in business districts.

The strategies discussed in this and other sections in this report are potential resources for jurisdictions in the San Diego region. The general descriptions of various TDM measures provided in this section and TDM strategies shown in Chapter 4 demonstrate how other jurisdictions within the United States and internationally have successfully used TDM to further their goals. Nationally, the powers granted to regulate and administer development and transportation infrastructure vary widely by jurisdiction. In some locations, counties have the authorities granted cities, so a reference to Arlington County, VA, or Montgomery County, MD (both good TDM examples), should not preclude a jurisdiction in the San Diego area from considering or using similar approaches.

Long Range Plans:

Long range planning activities guide future growth, affect how transportation and land use are integrated, and influence the perceived success or benefit of locating infrastructure or development in particular areas. Incorporating TDM into long range plans is the first step in the integration of TDM into the many levels of jurisdictional plans. It includes identifying the desired location and form of future land development and the planning and ultimately financing of transportation infrastructure. The general alignment of transit lines and the balance and mix of commercial and residential development are often determined in these plans, and begin to set the scene for effective SOV alternatives in later stages of the planning and implementation processes.

Types of Long-Range Plans

There are a number of different long range plans where TDM policies and direction can be provided including General Plans and Climate Action Plans.
General Plans: Broad TDM goals and policies can be included in the transportation/mobility/circulation element of the General Plan by encouraging complete streets (roadways that are designed for all users to include transit, cyclists, pedestrians, and Americans with Disabilities Act compliance [National Complete Streets Coalition]), as well as in the land use element by encouraging the types of development (Transit Oriented Development and Smart Growth) that promote multimodal versus auto-oriented communities².

Case Study – General Plans

General Plan, San Diego, CA: The Mobility Element of the City of San Diego’s General Plan includes a section that is dedicated to TDM (Section E). The plan lays out eight broad TDM policies that cover the following topics:

a. marketing and promotion of TDM to employers and employees
b. development and design standards that are conducive to alternative transportation
c. the provision of TDM programs and amenities such as car and bike sharing

General Plan, San Francisco, CA: The City of San Francisco’s Transportation Element recognizes that successful TDM program implementation requires partnerships between the public and private sectors and outlines low cost strategies that will benefit both public and private entities. Understanding that support from the business community is critical to TDM success, a key objective of the TDM portion of their transportation element is to “Develop and implement programs in the public and private sectors, which will support congestion management and air quality objectives, maintain mobility and enhance business vitality at minimum cost”.

Climate Action Plans: A Climate Action Plan includes specific policy recommendations and actions that a local government will use to address climate change and reduce GHG emissions. TDM strategies can assist with meeting climate change goals by identifying cost effective transportation solutions that support reductions in vehicle miles traveled and related emissions.

² Assembly Bill 1358, the California Complete Streets Act of 2008, requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users
Mid-Range Plans:
Mid-range plans can include Specific or Master Plans, Corridor Plans, Parking Management Plans, and TDM Plans. This is an opportunity for local agencies, who are the arbiters and implementers of area and site specific plans, to develop innovative ways to incorporate TDM into developments.

Types of Mid-Range Plans

Specific Plans or Master Plans: A Specific or Master Plan establishes a link between implementing policies of the general plan and the individual development proposals in a defined area. It provides development direction from the type, location, and intensity of uses to the design and capacity of infrastructure; from the resources used to finance public improvements to the design guidelines of a subdivision (State of California). TDM measures can be integrated into specific plans to mitigate traffic impacts associated with new development, to reduce parking requirements, and provide transportation choices for tenants and residents.

Case Study – Specific Plan

Transit Village Area Plan, Boulder, CO: This plan describes the city’s vision for the development of a 160-acre Transit Village. Chapter 5 provides a framework for the Transit Village TDM program which is based on four core elements:

- Parking Control
- Active Promotion of Transportation Options
- Sustainable Program Funding
- Performance Standards and Monitoring

Corridor Plans: A community’s roadway corridors provide the economic and social connections within and between neighborhoods and communities. The manner in which these corridors are planned and designed can create places that offer convenient travel and a source of community pride, or can result in a place that becomes congested with traffic.
Developing a corridor plan prior to the design of road improvements provides a vision for an entire corridor (i.e. the roadway facilities, neighborhoods along the road, and the interface areas between the neighborhood and the roadway). The value of a corridor plan is that it provides communities with a tool that integrates and balances mobility planning with local goals for land use and community character (Florida Atlantic University Center for Urban and Environmental Solutions).

**Case Study – Corridor Plan**

**East Riverside Corridor Master Plan, Austin, TX:** The City of Austin developed a Corridor Plan for East Riverside Drive, an important commercial corridor from downtown Austin to the Bergstrom International Airport. The plan established a vision for transforming an auto-oriented corridor into a multimodal corridor that accommodates all users and makes transportation alternatives a viable choice.

**Case Study – Parking Management Plan**

**Ann Arbor Downtown Development Authority Public Parking & Transportation Demand Management Strategies Plan, Ann Arbor, MI:** This plan was developed to gain greater efficiency from Ann Arbor’s public parking system by spreading demand and encouraging greater use of alternative transportation modes. The plan accomplishes this through on-street parking pricing that reflects and responds to parking demand while at the same time expanding and promoting transportation options.

**Parking Management, Claremont, CA:** The City of Claremont secured funding for a 477 space parking facility that includes preferential parking for transit users and carpoolers. The city used a combination of local and Federal Transit Administration (FTA) funds. This suburban community is developing a transit-oriented village consisting of 35 acres that includes over 200 new high-rise residential units with reduced parking requirements and over 150,000 square feet of retail, commercial and office space. The parking structure will be used to consolidate parking, reduce surface parking, support transit oriented development and the Claremont Intermodal Regional Transportation Center. Parking is prioritized for transit users and retail customers.
**Municipal TDM Plans:** A Municipal TDM Plan outlines specific goals and policies for reducing SOV trips and their impacts. These plans expand upon the broad TDM goals and policies laid out in the general plan and identify specific programs, projects, and funding for implementation. TDM plans typically establish vehicle trip reduction goals for specific land uses and outline actions for attaining those goals.

**Case Study – Municipal TDM Plan**

**Transportation Demand Management Plan, Rockville, MD:** The City of Rockville Traffic and Transportation Division identified the need for a five-year TDM Plan to prioritize TDM projects funded through their TDM fund. The City of Rockville collects a fee from developers to be used specifically for the City of Rockville TDM fund. As established in individual TDM agreements with developer applicants, the fee is $0.10 per square foot for commercial and retail developments and $60 per unit for residential development for a ten-year period. The plan establishes vehicle trip reduction goals for specific land uses and prioritizes actions for attaining those goals.

**Short Range Plans:**

Short-range plans as they pertain to TDM typically seek to influence drivers’ behavior for a shorter duration of time to mitigate construction or event related traffic. However, these short-duration mitigation plans provide valuable opportunities for drivers to ‘try-out’ alternative travel modes and perhaps modify their long-term travel choices.

**Types of Short-Range Plans:**

**TDM Plans for Construction Mitigation**—TDM Plans developed for construction projects (often as part of agency required Transportation Management or Traffic Mitigation Plans for construction projects) provide mitigation strategies that inform commuters of construction activities and promote transportation alternatives during construction. These plans provide and promote a customizable range of travel choices. Construction mitigation related TDM efforts can help encourage changes in typical travel mode, which may be continued by individual travelers after the project is complete and they are comfortable using transit, ridesharing, walking, or biking.

**Construction related TDM plans often include strategies to address the following (Houston-Galveston Area Council):**

- Commuter mode choice: services to encourage carpool, vanpool, enhanced transit, biking, walking
- When commuters work: flexible work schedules
- Where commuters work: teleworking
- What route commuters take: increased traveler information
4. Implementation of TDM

Urban Design, Site Development and Parking

This section provides a discussion on the policies and programs that realize the TDM goals laid out in the planning process. The information in this section demonstrates how TDM strategies and measures can be integrated and encouraged through urban design, site development, and parking management.

Urban Design

**Design Guidelines** – Local jurisdictions develop design guidelines to coordinate the overall development of an area so that projects help each other succeed and result in a more livable and cohesive community. Design control measures advance or transform districts, neighborhoods, or corridors as part of a larger policy or planning effort to promote multi-modal travel and integrate TDM features into building and community design. Design guidelines can encourage multimodal districts, corridors, Transit Oriented Development (TOD), or influence how individual buildings interact with the streetscape and the transportation network.

**Case Study – Design Guidelines**

**Active Design Guidelines, New York, NY:** The Active Design Guidelines collaboratively completed by four New York City Departments (Design & Construction, Health & Mental Hygiene, Transportation, and City Planning) presents design strategies that encourage active transportation (walking and biking to transit or work) and recreation for neighborhoods, streets and outdoor spaces. Key strategies include the following:

- Mixed land uses in city neighborhoods
- Improved access to transit and transit facilities
- Improved access to recreational facilities such as parks, plazas and open spaces
- Improved access to full-service grocery stores
- Accessible, pedestrian-friendly streets with high connectivity, traffic calming, landscaping and public amenities
- Facilitate biking for transportation and recreation through bicycle networks and infrastructure

**Sustainable Building Policy, Seattle, WA:** Seattle is one of the top cities in the nation for LEED facilities and the City of Seattle is one of the largest single owners of LEED facilities in the world. This achievement was spurred by the City’s adoption of the Sustainable Building Policy in 2000, which called for new City-funded projects and renovations with over 5,000 sq. ft. of occupied space to achieve a Silver rating using the U.S. Green Building Council’s (USGBC) LEED Green Building Rating System™.
Complete Streets—Complete Streets refers to design concepts and principles that focus more specifically on design of the street for all potential users—transit, bicyclists and pedestrians as well as cars. In the past, modes other than the auto may not have been prioritized and many performance measures of our roadways have focused on moving autos. Assembly Bill 1358, the California Complete Streets Act of 2008, requires cities and counties to include complete streets policies as part of their general plans so that roadways are designed to safely accommodate all users. There is no singular design prescription for Complete Streets; each one is unique and responds to its community context. A complete street may include: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible public transportation stops, frequent and safe crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more. A complete street in a rural area will look quite different from a complete street in a highly urban area, but both are designed to balance safety and convenience for everyone using the road (National Complete Streets Coalition).

**Case Study – Complete Streets**

**Urban Street Design Guidelines, City of Charlotte, NC:** With its award winning Urban Street Design Guidelines, Charlotte is using street design to shape its development patterns and provide residents and visitors with viable choices for how they move about the city. The guidelines include a six-step planning and design process that matches each street to the existing and emerging land use context. The process helps planners design streets that are sized appropriately for their neighborhood context and select streetscape elements that create an appealing environment and keep pedestrians, bicyclists, transit riders, and motorists safe.

**Maricopa Association of Governments Complete Streets Guide, Phoenix, AZ:** The Maricopa Association of Governments (MAG) has developed a resource to guide street design to “ensure that facilities for bicycles, pedestrians and transit are recognized as integral to a properly designed and functioning street.” The MAG Complete Streets Guide includes six steps to plan for complete streets: 1. Determining the Transportation Context, 2. Identify Current Transportation Modes and Facilities, 3. Identify the Complete Streets Gaps, 4. Determine Other Priorities, 5. Determine the Right-of-Way and Number of Lanes, and 6. Select Other Complete Street Elements. The guide also includes example outcomes, performance measures, strategies, and a list of potential local resources.
The effect of applying Charlotte’s Urban Street Design Guidelines creates an environment where pedestrians, cars, cyclists and transit coexist, and landscaping creates an aesthetically pleasing environment. Charlotte Department of Transportation, 2009

Facilities for pedestrians, transit users, and cyclists in Mesa, AZ
Maricopa Association of Governments Complete Streets, 2011 (photo credit Dan Burden)

Site Development

Establishing the appropriate regulatory framework for including TDM in the development review process has been a question for many jurisdictions and a variety of creative methods have been successfully employed. Many local jurisdictions have codified the role of TDM in the site plan review process via trip reduction ordinances. Because the land regulatory process varies so widely among jurisdictions, each city must examine its own statutory process and define how to integrate the desired approaches into its own framework.
TDM goals also vary widely from jurisdiction to jurisdiction. Some agencies look at TDM as a traffic mitigation tool, others might be establishing goals for alternative modes of transportation, and still others might wish to use TDM to complement and reinforce their urban planning vision. Many jurisdictions have found that when they identify a need or the desire for TDM, they can find creative methods of accomplishing it within their specific development authority. As a preliminary step, local jurisdictions should consider establishing peak hour non-auto mode share goals in their land use plans or specific plans requiring or encouraging each development to meet or contribute toward those goals.

Often developers are willing to voluntarily apply TDM actions if they are provided some credit toward their development approval, or otherwise secure some benefit in the process. However the most successful TDM programs typically rely on continuing, enforceable ordinances. Stand-alone programs that depend on voluntary measures, while somewhat successful in reducing auto trips, tend to have less influence on the nature or type of the development in a community. In a voluntary environment TDM with no formal structure in place, strategies can be inconsistently incorporated into development applications and are not verified to ensure they are implemented as proposed. For example, in 2010 the District of Columbia recognized the need for a formal TDM program when it began attracting new residential, commercial and retail development with redevelopment occurring at an unprecedented pace. While highly beneficial in many respects, the development generated significant additional vehicular traffic. Their redevelopment permit process lacked a systematic approach and process for implementing TDM as a way of meeting the District’s goals of reducing auto trips and accommodating travel through the complete transportation network. TDM was handled on a project-by-project basis, with limited opportunities for coordination among agencies. Based on national best practices and input received from stakeholders, they developed a plan to formalize and codify TDM into their development review process.

While regulations and requirements are included in the most successful TDM programs, education about the benefits of TDM and encouragement to participate in TDM programs is integral to maximizing TDM’s success. Providing credible research into the value of TDM, as well as assisting in the marketing of these programs to prospective tenants and owners helps convert the interest in quality of life improvements into an economic incentive for developers to provide TDM programs (Government of the District of Columbia Department of Transportation).

Trip Reduction Ordinances

Trip Reduction Ordinances (TROs) require developers, employers, and/or building managers to provide amenities and or incentives that encourage occupants or employees to use alternative modes of transportation. Ordinances implemented by jurisdictions take many different forms but often require a certain reduction in trips with rewards and penalties set for achievement or nonattainment of goals. Trip reduction plans are required as part of the building permit process and establish various strategies or building design elements that will reduce auto trips and encourage alternative modes. This can include a variety of site amenities such as:

- Secure bicycle parking (racks, lockers or bike station)
- Showers and lockers
- Site design that facilitates transit use, walking and cycling. This includes transit stops, bike and pedestrian pathways, landscaping, benches and awnings, lighting, etc.
• Off-site amenities such as sidewalk improvements, bike network improvements, transit station improvements, improved transit service, transit shelters, roadway and streetscape improvements, intersection improvements, etc.

• On-site amenities that reduce the need to drive by requiring or encouraging a mix of uses (cafes, drug stores, groceries, banks, post office, services, gyms and childcare) into major developments so workers don’t need to use cars during the day.

• Parking Maximums

• Unbundled parking

• Priority parking for HOVs

• Market rate parking

Table 1 also provides a comprehensive list of TDM strategies that can be applied to developments and/or for consideration as California Environmental Quality Act mitigation measures for projects.

Case Study – Trip Reduction Ordinance

Parking and Transportation Demand Management Ordinance, Cambridge, MA: Cambridge Municipal Code reduces vehicle trips and traffic congestion in the city by requiring Parking and Transportation Demand Management (PTDM) plans for commercial projects that propose parking. The ordinance calls for a SOV mode-share commitment of 10 percent below the 1990 Census Journey to Work data for the project location. The PTDM plans must include a comprehensive set of TDM measures and annual monitoring and reporting to the City is mandatory. According to the City, the ordinance has contributed to a 24 percent reduction in VMT and contributed to a reduction in 38 million vehicle miles in 2011. Sixty-two percent of the monitored projects in 2011 met their mode-split commitments for 2011. The City offers technical assistance for non-compliant projects to identify and promote additional TDM measures that reduce SOV travel. This mutually cooperative process has avoided the use of enforcement provisions contained within the PTDM ordinance. A copy of the ordinance is provided in Appendix C.

Bikes in Buildings, New York, NY: The Bikes in Buildings Program aims to increase bicycle commuting by providing cyclists with secure parking during the workday. The program is based on the Bicycle Access to Office Buildings Law, which requires commercial office buildings to allow cyclists to bring bicycles into their offices by elevator, upon request, or provide alternate bicycle parking facilities in lieu of elevator access.
Development Agreements

When TDM supporting amenities are provided within developments, it becomes much easier for tenants to change their transportation choice. For example, when office buildings offer showers and secure bike parking they will see an increase in walking and biking. Carpooling and vanpooling increase when priority parking spaces are set aside for HOVs. Amenities supporting TDM can be identified either specifically for the site or can be off-site. Off-site examples include providing bus shelters, intersection improvements that improve pedestrian safety, or even the construction, or contribution to construction, of new bikeways that would serve residents and commuters in the area of the development. Off-site improvements are often identified as part of an overall area transportation plan, so that improvements provided by the developer are coordinated and meet local and regional needs.

The best time to ensure that features like these are included in developments is before construction, when a permit is being negotiated. Most jurisdictions that have had success with developer sponsored TDM programs as part of their land development process have found a written development agreement to be an essential element of their success. In addition, formal definition of the credits given for specific types of improvements (e.g. reduction in auto trips) must be defined and incorporated into the development review process or the jurisdiction’s TDM guidelines. This documentation reduces the likelihood of prolonged negotiations and fosters equal and commensurate improvements for individual developments.

The agreement, which is part of the development approval conditions, could include items such as the following:

- What specific TDM strategies are to be implemented, when they will start, and how long they will be operated
- Who will be responsible for funding and operating the programs once the development is built and/or occupied (if the developer often is selling the property after it is built)
- What is the expected outcome of the TDM program in terms of vehicle trips reduced
- How is the outcome to be measured
- If reports on TDM actions are to be provided, how frequently, and to whom
- What is the penalty for non-achievement of program goals or failure to continue TDM programs?

Development agreements are more widely supported and easier to negotiate when developers receive something in return, such as waiving certain requirements for a license or permit approval. For example, incentives such as bid preferences, density bonuses, exemptions, and streamlined processes can have a significant financial benefit for the developer and cost nothing to the local government. For example, Walton County, FL allows housing developers to add more units to their developments in exchange for constructing greenway corridors, bike path connectors, and sidewalks. Bethesda, MD expedites the plan review for developments that provide open space, public art, and sidewalks. Minneapolis, MN reduces minimum parking requirements for non-residential buildings in exchange for bicycle parking spots (Public Health Law and Policy).

The development agreement should outline what the developer is obtaining as a benefit from operating the program (such as mitigation of traffic at nearby intersections or reduced parking requirements). Research has shown the following approaches for incentivizing TDM to be effective:

- Provide developers with TDM credits, in the form of “peak hour auto trips reduced” for defined actions. For example a bus shelter is worth three auto trips, or participation in a carshare program is worth two auto trips.
- Allow for TDM actions to reduce the site trip generation, so the trips are not reflected in the traffic impact analysis for the proposed development.
• Use a multimodal level of service for intersections, where pedestrian and bicycle use is factored into an overall analysis of the location.

**Case Study – Development Agreements**

**Development Agreement, Saanich, British Columbia, Canada:** The District of Saanich worked with several partners to build TDM measures into the innovative Short Street redevelopment project. The developer received reduced parking requirement in exchange for providing new residents with a transit pass for one year, a carshare vehicle with membership for each unit, and secure underground bicycle storage.

**Local Area Transportation Review (LATR) Guidelines, Montgomery County, MD:** Montgomery County has a long history of successfully using TDM actions to reduce peak hour auto trips in their development review process. Their LATR Guidelines provide specific actions for a developer “entering into a legally-binding agreement with the Planning Board and Montgomery County DOT to mitigate the impact of all or a part of their site-generated trips within the policy area where the site is located.” Each TDM agreement is for 12 years and normally has a gradually decreasing surety credit to assure program implementation and continuance.

**Defining Development Agreements** - The question of how to define agreements between land developers (or development applicants) and the local government is one that can be challenging to local governments. The following ideas have proven to be manageable and successful in other locations:

• The TDM outcomes and specific strategies offered by the developer and accepted by the city should become part of the “conditions of approval” for the development. With this approach TDM actions are as valid as any other aspect, and should be treated just like physical transportation improvements or site design. The best conditions are outcome related (number of vehicles entering the building in the morning peak hour, for example). Note that with this approach the TDM program “goes with the land” so if the property is sold the new owners have the same requirements. This is critical to keeping the programs going over time.

• After the land development is approved, a separate contract is written between the developer and the approving agency, and perhaps including a third group, like a TMA, who might be providing monitoring. This contract can include aspects such as:
  - The expected outcomes and phasing of the TDM program. The new development cannot be expected to achieve all goals in the first year as the building is occupied, but all physical changes (bus stops, bike racks) should be required before the building opens. Progress on the TDM strategies ideally begins with the first tenants or occupants.
  - How long the program is to be operated. Most agreements do not require programs to be maintained without an ending date.
  - What monitoring data is to be provided by the developer or assignees, when it is due, and the receiving entity.
  - If independent monitoring and validation is to be conducted, assuring developer provided data is accurate. This validation should be done by (or for) the City or other monitoring agency, with the costs paid by the developer.
What actions are to be taken by the developer if the performance goals are not met. Often some grace period is provided after the monitoring shows the performance is substandard, but a showing of progress is essential over time from the perspective of the City.

One valuable aspect of the approval or contracts has been a bond or letter of credit from the developer held by the monitoring agency in an amount sufficient to operate the programs if the developer should default or fail over time to achieve the goals. This is the most difficult of these guidelines to achieve, yet is the most effective way to keep the developer or other assignees focused on achieving the TDM goals. The bond or credit can be decreased over time, as the program progresses.

Residential developments - While many jurisdictions apply TDM requirements only to commercial developments, residential developments should not be eliminated from the development agreement process. TDM strategies to be considered for residential developments are primarily influenced by the location and its proximity to facilities for alternative modes of transportation. Planned or new residential communities can use parking maximums rather than minimums; provide on-site parking for carsharing programs; offer bikesharing and bicycle parking, and amenities or facilities for pedestrians.

Case Study– Residential Communities

Santa Clara Valley Transportation Annual Pass Program, Santa Clara, CA: Residential communities such as condominiums, apartments, townhouses, homeowner associations, and community associations are able to purchase transit passes for their residents at a discounted price, similar to those available to employers. The use of these passes reduces the user-paid costs for a transit pass, increases transit ridership, and results in a lower demand for parking.

Parking Requirement Reduction – Carsharing, San Francisco, CA: The San Francisco Planning Department granted a variance to construct the 141-unit Symphony Towers apartments with only 51 spaces (rather than the required 141) in part due to the commitment for two parking spaces dedicated to carsharing and the use of unbundled parking costs (parking spaces are rented separately from the unit).

Employer Commute Trip Reduction Programs

TROs in some jurisdictions require employers with more than a certain number of employees to make a good faith effort to encourage employees to reduce automobile commute trips. These public and private employers are required to develop trip reduction plans for their work site. Commute trip reduction plans serve as agreements between the city and the employer for establishing employee trip reduction targets and identifying various strategies to help achieve those targets over a certain time frame. In certain instances, employers that fail to make such an effort may be fined. Examples of the types of programs that can be offered by employers can include:

- Maintaining an employer network in the SANDAG iCommute program and promoting its RideMatcher service to tenants/employees
- Designating an Employee Transportation Coordinator
• Commuter information center (bulletin board, kiosk, website) and a link to the SANDAG iCommute program on their intranet
• Preparing a parking management plan that includes charging employees market rate for SOV parking and providing reserved or free spaces for registered carpools or vanpools
• Parking Cash Out program
• On-site carsharing vehicle(s) or bikesharing
• Flexible or alternative work hours
• Telework program
• Transit, carpool, and vanpool subsidies
• Secure bicycle parking, showers and locker facilities
• Pre-tax deduction for transit or vanpool fares and bicycle commute costs

Table 1 provides a comprehensive listing of TDM measures that can be applied at the work site.

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**Case Study – Employer Trip Reduction Ordinance**

**Transportation Management Ordinance - Santa Monica, CA:** Transportation Management Ordinance 1604 was enacted by the City in 1990 in an effort to reduce traffic congestion and improve air quality. The ordinance affects employers with ten employees or more and focuses on reducing the number of employee commute trips generated by Santa Monica employers. Employers with 10 - 49 employees provide each of their employees with information about ridesharing, educating their employees about air quality issues and alternatives to driving alone to work. Employers of 50 or more employees further encourage and entice employees to rideshare by implementing a variety of incentives and strategies. A yearly employee survey tracks each employer’s progress in reducing drive alone trips.

**Mandatory Parking Cash Out**
The City of Santa Monica is the only city in the nation to implement a mandatory Parking Cash Out Program. Parking Cash Out, or AB2109, is a State law requiring employers of fifty or more employees who lease their parking, and subsidize any part of their employee parking to offer their employees the opportunity to give up their parking space and rideshare to work instead. In return for giving up their parking space, the employer pays the employee the cost of the parking space. The ordinance summary is provided in Appendix D

For ease of administration, mandatory TROs often apply only to large developments and employers (those with at least 50 or 100 employees at a worksite) although this limits their effectiveness since the majority of employees in most business districts work for smaller companies. To address this issue, smaller employers or groups of employers can form a Transportation Management Association (TMA) to provide and manage TDM services in a particular location. TMAs are non-profit, member-controlled organizations that provide transportation services in a particular area, such as a commercial district, mall, medical center, business district or industrial park. They are generally public-private partnerships, consisting primarily of area businesses with local government support.
TMAs provide an institutional framework for TDM Programs and services. They are usually more cost effective than programs managed by individual businesses. TMAs allow small employers to provide trip reduction services comparable to those offered by large companies. They avoid problems that may be associated with government run TDM programs, since they are managed and funded primarily by members. (Victoria Transport Policy Institute).

Case Study – Transportation Management Association

Commuter Connection – Minneapolis, MN: The Downtown Minneapolis TMA, and Commuter Connection, advocates for and promotes a sustainable transit and transportation system that supports a vital and growing downtown Minneapolis. The TMA, created by the City Council in 1991, is public-private non-profit partnership of the City of Minneapolis and downtown business community. TMA members represent various business and public sectors and are approved by City Council. Commuter Connection is program of the Downtown Minneapolis TMA that provides TDM services to commuters, employers and property managers.

Employer based TDM strategies have the potential to yield a significant reduction in employee vehicle trips. Research conducted by the Washington State Department of Transportation found that when employers start charging for parking that was previously subsidized, vehicle trips are reduced by 20-30 percent, and when employers provide a cash incentive and support for ridesharing (such as ride matching service and Guaranteed Ride Home), vehicle trips are reduced by nearly 25 percent (City of Seattle).

To support local jurisdictions and their businesses with trip reduction planning, the SANDAG iCommute program provides the technical support and resources necessary for assessing, developing, implementing and tracking the success of a commuter program.

Case Study – Commute Trip Reduction Law Implementation

Commute Trip Reduction Plan, Seattle, WA: Consistent with the 1991 Commute Trip Reduction Law adopted by the Washington State Legislature, the City of Seattle adopted a commute trip reduction plan into the Seattle Municipal Code. The commute trip reduction plan requires employers with 100 or more employees that report to a single site between the hours of 6 and 9 a.m. to develop, implement and promote programs that help employees reduce drive alone commute trips. An employer’s program must include at least two TDM elements from a menu of TDM options provided by the city.

Employers must update and submit their plan to the City for review and approval every two years. This includes conducting a commuter survey to measure employees’ drive alone rates. This mandatory program is coupled with education and encouragement programs to include “Way to Go, Seattle!” - a city sponsored source for programs; tools, and incentives for walking, biking, using transit, and carpooling.
Parking Strategies

Many jurisdictions have realized that the attractiveness of transit and ridesharing is indirectly proportional to the availability and cost of parking at a location. If vehicle parking is readily available and free, the incentives to use other modes is greatly reduced. Parking costs are typically hidden from drivers, who therefore see few, if any opportunities, to save on such costs. Nationally, over 90 percent of private employers subsidize employee parking, while only 6 percent subsidize transit making driving to work an easy choice (Greenberg). Subsidized and hidden parking costs can lead to a variety of problems including substantially higher development costs. For example, requiring minimum parking requirements for housing can increase development costs and reduce supply. Additionally, minimum use-based commercial and office parking requirements raise costs and hinder redevelopment.

Parking policies complement many TDM efforts, and normally have included incentives or disincentives for fewer spaces per unit of development (parking maximums rather than minimums), encourage shared parking among land uses (retail and office for example) and/or a fee per parking space. Managing parking helps to reduce the undesirable impacts of parking demand on traffic levels and the resulting impacts on community design and economic development. When free or inexpensive parking is offered, it leads to overuse, often by long-term or all-day parkers who occupy valuable spaces at the expense of short-term parkers, limiting access to retail businesses and service industries catering to short-term users. Management of parking prices and supply can help to ensure access to retail businesses, provide access for visitors to regional and neighborhood attractions, and support neighborhood vitality (City of Seattle).

Area Wide Parking Policy (Policy/Ordinance): Often parking policies are most successful when they are holistic and coupled with improved access to transportation alternatives. One well known global example of a comprehensive parking policy that had a direct impact on increased transit use and reduced vehicle miles traveled is Perth, Australia. Faced with increasing congestion on downtown streets and roadways leading to downtown, declining air quality, low active and public transportation rates, and reduced vibrancy in the downtown, Perth undertook a major change in their approach to the supply of parking in the downtown area, which was coupled with transit improvements. The primary components of Perth’s parking policy included the restriction of long-term public parking to areas on the periphery of the downtown area, the licensing and subsequent collection of fees for all existing and new off and on-street parking spaces, and institution of parking limitations based on land area, not density. The following graphic shows the Pedestrian Priority Zone (in green) where both parking and access to parking was most restricted, the Short Stay Parking Zone (in tan) where short term public parking was permitted, and the General Parking Zone (in white) where both long and short-term parking was allowed, thus providing auto access to the downtown, but giving priority to pedestrians and cyclists in the downtown core that is serviced by both bus and rail transit.
Perth Parking Policy – Public Parking Zones, Presentation by Emmerson Richardson, SKM, October 2011

The changes in parking policy were instituted in conjunction with the provision of both new and free transit services in the downtown area. All revenue from the licensing of parking was used to fund both the new and the free transit service. This considerable departure from the previous auto-centric approach accounted for a mode share shift from 50 percent auto and 35 percent transit to 35 percent auto and 50 percent transit. It also should be noted that the institution of the parking policy did not negatively affect business in the downtown area – during the same timeframe, employment grew by 30 percent (Richardson, E).

**Parking Maximums, Unbundled Parking and Shared Parking:** Establishing limits on the quantity of parking that can be provided for a given development promotes more efficient use of land, enhances urban form, and can encourage the use of alternative modes. Parking maximums can be linked with the availability of alternative modes to capture the accessibility of the existing transit infrastructure.

Unbundled parking refers to parking that is rented or sold separately, rather than automatically included with building space. The cost of parking for residential and commercial units is often passed on to the occupants indirectly through the rent or purchase price (“bundled”) rather than directly through a separate charge. This means that tenants or owners are not able to purchase only as much parking as they need, and are not given the opportunity to save money by using fewer parking spaces. This is not only more equitable, but can also reduce the total amount of parking required for the building (Metropolitan Area Planning Council). Parking can be unbundled in several ways:

- Facility managers can unbundle parking when renting building space.
• Developers can make some or all parking optional when selling buildings. In some cases it may be easier to offer a discount to renters who use fewer than average parking spaces, rather than charging an additional fee. For example, an office or apartment might rent for $1,000 per month with two “free” parking spaces, but renters who only use one space receive a $75 monthly discount.

• Parking costs can be itemized in lease agreements to help renters understand the parking costs they bear, and to help them negotiate reductions (Victoria Transport Policy Institute).

Shared parking is based upon the concept of using the same parking spaces for two or more land uses at different times. Shared parking can significantly improve the economics of constructing new parking. Rather than one user per day, a facility may service and charge multiple users. Allowing for shared parking arrangements significantly reduces the amount of land devoted to parking, creating more opportunities for mixed use, creative site planning and landscaping. In addition to revisions to local zoning codes to enable shared parking, shared parking arrangements can be implemented through shared parking agreements between individual developers. In some cases, shared parking can be a formal or informal agreement among different peak users on different days. Some local jurisdictions incorporate language in local ordinances to permit shared parking. These jurisdictions allow shared parking to meet minimum parking requirements for uses located within the same lot or building and also permit off-site shared parking arrangements to meet on-site parking requirements for complementary uses within a defined area (Metropolitan Transportation Commission).
Demand-Based or Performance-Based Parking Pricing: Demand-based (or performance-based) parking utilizes a market-rate approach to manage the supply of parking in areas with high retail and service activity. This methodology uses parking occupancy and turnover data to set parking rates in a manner that drives demand patterns to achieve a clearly stated policy objective. The goal is to avoid the problem of cruising for parking spaces, which congests traffic and pollutes the air as drivers circle the block searching for an open space. Under this program parking rates at curbside meters respond to fluctuations in demand in an attempt to have at least one parking space available at any time on a given block. The right price for curbside parking is considered the lowest price that will leave parking space available on each block at all times (Shoup). Demand-based parking requires the city to set a target occupancy rate (typically around 85%) for the total number of on-street parking spaces, which helps regulate the parking price based on demand.

Demand-based parking initiatives are best supported when real-time parking information is available. Real-time parking uses parking sensors, installed in on-street parking spaces and/or in parking garages, to track when and where parking is available and the price for the available spaces. Sensor data is uploaded wirelessly to a data feed that makes the information available to the public via a website, smartphone applications, text message, etc. By checking parking

Case Study – Parking Policy

Downtown Parking Management Program, City of Ventura, CA: The City of Ventura manages on-street and off-street parking to achieve a 15 percent parking vacancy rate using metered parking. All funds collected are reinvested in downtown. In the first year of operation (September 2010 to September 2011), the program performed as follows:

- 502,220 pay station transactions and $530,000 in pay station revenue
- $198,000 in permit and parking structure parking revenue
- Currently generating an average of $10,000 a month in net revenue to be used toward payment of program and additional improvements to the downtown
- The program is offsetting approximately $500,000 in personnel costs that were previously funded by the General Fund
- 83 percent of merchants surveyed support the parking management program after implementation

Additionally, shared on-site parking between land uses with different periods of peak parking demand is permitted for all uses. Shared on-site parking is allowed to satisfy 100 percent of the minimum parking requirement for each use.

Maximum Parking Requirements, Portland, OR: The City of Portland, Oregon has established maximum parking requirements for new development in each central business district. Additionally, the City has also applied a parking maximum for development across the entire Portland metro area. Parking maximums are set based upon the availability of transit service. Lower maximums are set based upon a one-quarter mile walk from a frequently served bus stop or one-half mile walk from a transit station. The parking maximum in the central downtown core is 0.7 per 1,000 sq. ft.; up to 2.5 in adjacent business districts.
availability before leaving home, drivers will know where they can expect to find parking and how much it will cost (San Francisco Municipal Transportation Agency).

**Case Study – Demand Based Parking**

**Demand Based Parking, Redwood City, CA**: Redwood City changed their public parking approach to maintain the vibrancy of their downtown, while also accommodating new retail and recreational development in the downtown area. After an extensive study of existing parking conditions and issues, and review of potential parking options, Redwood City adopted a demand based parking approach. Based on initial findings, the downtown parking occupancy rate was set at 85 percent. Parking prices are adjusted to maintain 15 percent of the total parking supply available to parkers wishing to pay to park at an on-street meter. Additionally, the city removed all time limits on parking downtown, relying on market prices to control parking turn-over. Pay-by-space meter technology allows for payment using a smartphone. Parking meter revenue is used to fund downtown improvements.

**Real-time Parking, San Francisco, CA**: SFpark uses demand-responsive pricing to redistribute parking demand and reduce the need for circling and double-parking. In order to direct drivers toward parking, SFpark must know when and where spaces are available. Wireless sensors can perform this task in a way that was previously impossible, reporting availability space-by-space and minute-by-minute. The SFpark data feed allows real-time information to reach drivers directly. In addition to a parking availability map available online, information on parking availability is distributed via a free SFpark iPhone app, Android app, the region’s 511 phone system, text message, and electronic display signs at high-traffic locations in the City.

**Developing Successful TDM Strategies and Programs**

It takes a multi-tiered process to create successful TDM programs, and each geographic scale and planning level incorporates different actions and is implemented in different ways. Table 1 provides a summary of the range of plans and strategies that can help inform and guide the implementation of TDM at various levels. Column one in the table lists the types of plans that can guide and regulate growth and development from the site specific to the regional or state level. Implementation tools and mechanisms are the regulatory elements such as policies and ordinances necessary to be able to incorporate TDM strategies into the land development process. The next seven columns provide information on various TDM strategies, categorized by: land use management, transit, ridesharing, parking management, pricing, bicycle and pedestrian amenities, general support, and programs or services. The final column highlights performance measures. It can be observed that each category contemplates specific actions that can apply for each stage of the land development process; some of those TDM strategies require a coordinated effort between different geographic levels and therefore can be approached by different entities and key stakeholders simultaneously.
<table>
<thead>
<tr>
<th>Table 1: TDM Strategies Matrix</th>
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<tbody>
<tr>
<td><strong>Geography</strong></td>
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<tr>
<td>• TDM Site Plans</td>
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<td>• Construction Mitigation Plans</td>
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<td>• Transportation Management Association (TMA)</td>
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<td>• Commuter Benefit Program</td>
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<td>• Parking regulations</td>
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<td>• Identify staff or TDM coordinator</td>
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<td>• Complete Streets</td>
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<tr>
<td>• Site design that promotes facilities transit, walking and/or biking</td>
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<tr>
<td>• Restricted automobile use in certain key facilities</td>
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<tr>
<td><strong>Implementation tool</strong></td>
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<td>• Site design that promotes facilities transit, walking and/or biking</td>
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<td>• Complete Streets</td>
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<td>• Growth Management</td>
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<td>• Price</td>
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<td>• Transit</td>
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<tr>
<td>• Non-motorized trip counts</td>
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<tr>
<td>• Transit only lanes or priority routes</td>
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<tr>
<td>• Improved accessibility to transit stops (safe bike and pedestrian connections)</td>
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<tr>
<td>• First mile and last mile solutions to transit</td>
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<tr>
<td>• Outreach and promotion</td>
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<tr>
<td>• Support the implementation of transit facilities (shelters, stations)</td>
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<tr>
<td>• Transit priority signaling at intersections</td>
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<td>• Transit only lanes or priority routes</td>
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<tr>
<td>• Urban design guidelines that promote and facilitate transit, walking, and biking</td>
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<tr>
<td>• Complete Streets (AB 1358)</td>
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<tr>
<td>• Design Guidelines</td>
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<td>• Transportation Agreements</td>
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<td>• California Environmental Quality Act</td>
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<td><strong>Performance Measures</strong></td>
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<td>• Average Vehicle Ridership (AVR)</td>
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<td>• Mitigation Plans</td>
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<tr>
<td>• Subsidize transit fares</td>
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<tr>
<td>• Provide transit information (maps, signage, real-time info, etc.)</td>
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<tr>
<td>• Provide shuttles from transit to worksite</td>
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<tr>
<td>• Support carsharing and other first and last mile measures</td>
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<tr>
<td>• Implement flex hours, telework and/or compressed work week options.</td>
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<tr>
<td>• Promote /enhance the Guaranteed Ride Home program</td>
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<tr>
<td><strong>TDM programs and Program support</strong></td>
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<tr>
<td>• Designate an employee transportation coordinator to promote and coordinate transit, ridesharing, walking and biking.</td>
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<td>• Implement flex hours, telework and/or compressed work week options.</td>
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<td>• Allow employees to relocate jobs to branch office nearest their homes.</td>
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<td>• Provide pre-tax benefit for employees who use transit, vanpool, or bike to work.</td>
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<td>• Promote the regional ridematching service</td>
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<td>• Implement Parking Cash Out</td>
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<tr>
<td>• Parking reservation system (Smart Parking – pay more for priority spots)</td>
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<td>• Carsharing</td>
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<td>• Park &amp; Ride lots</td>
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<td>• HOV lanes</td>
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<td>• Managed lanes</td>
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<td>• School Bus programs</td>
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<td>• Supportive zoning requirements for carpool/vanpool</td>
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<td>• Priority public parking for carpool /vanpool</td>
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<tr>
<td>• Way-finding and guidance system to available parking</td>
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<tr>
<td>• Demand based or performance based pricing</td>
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<tr>
<td>• Restrict long-term/commuter parking to peripheral areas</td>
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<tr>
<td>• Urbandize the price of parking</td>
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<tr>
<td>• Congestion pricing on roadways or areas</td>
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<tr>
<td>• Variable market rate on street parking pricing</td>
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<tr>
<td>• Plan and implement a bicycle and pedestrian network that is connected to regional and state facilities and that connects to transit</td>
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<td>• Provide ample and secure bike parking</td>
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<td>• Public awareness programs for bicyclists/pedestrians</td>
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<td>• Bike-sharing program</td>
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<td>• Promotion and outreach to major employers and the community</td>
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<td>• Enforcement of TDM policies</td>
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<td>• Form TMAs to achieve shared goals.</td>
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<tr>
<td>• Level of service (LOS)</td>
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<td>• Mode split and mode shift</td>
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<tr>
<td>• Bicycle and pedestrian counts for commutes and other trips</td>
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<td>• Transit travel time reliability</td>
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<td>• Public parking demand</td>
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<td>• VMT</td>
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<td>• SOV trip reduction</td>
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<td><strong>Land Use &amp; Urban Design</strong></td>
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<td>• Growth Management</td>
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<td>• Complete Streets (AB 1358)</td>
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<td>• Enhanced sustainability strategies and facilities</td>
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<td>• Safe Routes to Transit</td>
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<td>• Transit information</td>
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<td>• SOV trip reduction</td>
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<td><strong>Transit</strong></td>
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<td>• HOV lane/transit only lane</td>
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<td>• Transit supportive infrastructure and facilities</td>
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<td>• Safe Routes to Transit</td>
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<td>• Traveler information</td>
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<td>• Transit marketing programs</td>
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<td>• Regional vanpool program</td>
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<td>• Carpool Incentive Program</td>
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<td>• Guaranteed Ride Home</td>
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<td>• Free ridematching service</td>
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<td>• Multimodal Park &amp; Ride lots</td>
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<tr>
<td>• Support carsharing programs</td>
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<td>• Advanced traveler information systems</td>
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<tr>
<td>• 2050 RTP and SCS – Technical Appendix N of the Urban Area Transit Strategy</td>
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<tr>
<td>• Provision and support of HOT lanes/Dynamic pricing of roadway facilities and managed lanes</td>
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<tr>
<td>• Plan for and implement a regional/statewide bicycle network</td>
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<td>• Public awareness programs for bicyclists and pedestrians</td>
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<td>• Provide secure bike parking at key intermodal transit centers</td>
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<tr>
<td>• Bike-sharing programs</td>
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<tr>
<td>• Commute services and programs</td>
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<tr>
<td>• SANDAG: Regional Intermodal Transportation Management Systems (TMS) Network</td>
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<td>• Education and awareness campaigns for all modes</td>
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<td>• 511 phone and 511ad.com</td>
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<tr>
<td><strong>Ridesharing</strong></td>
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<tr>
<td>• Site design that promotes walking and/or biking</td>
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<td>• Provide showers and lockers at employment sites</td>
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<td>• Provide secure bike parking</td>
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<td>• Bicycle-sharing programs</td>
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<td><strong>Parking Management</strong></td>
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<td>• Bicycle-sharing programs</td>
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<td><strong>Pricing</strong></td>
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<td>• Change market rate for parking</td>
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<td>• Parking Cash Out</td>
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<td>• Parking reservation system (Smart Parking – pay more for priority spots)</td>
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<td><strong>Bicycle &amp; Pedestrian</strong></td>
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<td>• Designate an employee transportation coordinator to promote and coordinate transit, ridesharing, walking and biking.</td>
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<td>• Implement Parking Cash Out</td>
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<tr>
<td><strong>Performance Measures</strong></td>
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<td>• Parking and vehicle counts</td>
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<tr>
<td>• Average Vehicle Ridership (AVR)</td>
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<tr>
<td>• Vehicle Employee Ratio</td>
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<tr>
<td>• Number of equivalent SOV trips not made/reduced</td>
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<tr>
<td>• VMT reduced</td>
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<tr>
<td>• Parking revenue</td>
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<tr>
<td>• Transportation Management Association memberships</td>
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</tbody>
</table>
5. Managing and Monitoring TDM

TDM policies and strategies must be planned, implemented, and monitored if they are to achieve maximum success. TDM programs are often multi-layered, with activities occurring at the site, area, city/county, regional and state levels, ideally all working together. The local jurisdiction is typically in the best position to coordinate local TDM efforts and either has, or can obtain, the needed regulatory and policy tools. This section provides information on how a local jurisdiction is typically involved in managing and monitoring TDM programs.

Managing TDM Programs

Agencies that wish to most effectively use TDM strategies may want to identify a staff function related to managing and monitoring TDM programs. One or more staff, normally in the planning or development review office, would have duties such as:

- Identifying and championing adoption of regulations that provide specific guidance on using TDM strategies in the land development process.
- Developing agreement frameworks that land development applicants can use to propose TDM actions.
- Leading negotiations with development applicants and structuring mutually supportive agreements between the private sector and public agencies.
- City-wide data collection and compilation efforts.
- Monitoring implementation and achievement of the strategies after a development is approved and underway (unless a TMA is established for this function).

Local agencies typically bear the cost of enacting TDM policies and programs, but implementation costs are borne by the employer or developer. These programs can be very effective, especially if mandatory, because they legally require action. This position can be partially funded by development fees. For example the City of Rockville, MD collects a fee from developers to be used specifically for the City of Rockville TDM fund (Case Study – Municipal TDM Plan). The City of Ventura offsets personnel costs through parking fees (Case Study – Parking Policy). Alternatively the cost could be seen as a general jurisdictional cost to achieve broader city goals and a function that reduces other transportation expenditures over time.

For ease of administration, some jurisdictions choose to form a non-profit TMA to manage and monitor TDM initiatives. More information on TMAs and a case study are provided in Section 4 under Employer Commute Trip Reduction Programs

Measuring the Success of TDM Strategies & Programs

As with any investment, it is important to be able to demonstrate the impact of TDM initiatives. The ability to regularly monitor and evaluate TDM strategies helps local governments select the best strategies for addressing specific policy objectives and also to assist in setting relevant and realistic TDM goals. Demonstrating that the resources invested have provided measurable change is important for continued support and to ensure that the goals of the TDM plan or program are being met.
Measuring Success

One challenge in measuring the effect of TDM initiatives is that impacts are often more qualitative in nature. The cause-and-effect relationship between an initiative and the resulting change in travel behavior may be complicated by a number of other factors.

TDM initiatives that build awareness of travel options are important – but they impact personal attitudes (which are difficult to measure) and compete with many other factors that shape how individuals think (Transports Canada). However, using participant surveys (employers and employees) and measuring the change in travel behavior over time yields quantifiable and measurable results. For example, the Atlanta Cash for Commuters (CFC) program has conducted surveys of CFC participants at various times following their program participation to determine the percent of individuals that maintained their change from SOV use to alternative modes. By using participant surveys before, during, and after each yearly CFC program, the CFC was able to show that a significant number of participants maintained their use of alternative modes after program completion and the incentive of $3 per day was no longer a factor (Gray).

Recent changes in the Highway Capacity Manual include more traditionally quantifiable performance measures, such as level of service for walking, bicycling, and transit, which can be used for before and after evaluation of targeted TDM strategies (New TRB Publication/Ryus, Vandehey, Elefteriadou, Dowling, Ostrom).

The listing below provides a number of performance indicators that can be used to evaluate and measure the success of TDM strategies and programs. Selection of the individual measure will depend on the TDM strategy being measured - some measures are more suitable to evaluating TDM strategies for either a particular time (such as peak hour) or geographic location (such as destination, district or region).

- **Awareness** – the portion of potential users who are aware of a program or service.
- **Participation** – the number of people who respond to an outreach effort or request to participate in a program.
- **Utilization** – the number of people who use a service or alternative mode.
- **Mode split** – the portion of travelers who use each transportation mode.
- **Mode shift** – the number or portion of SOV trips shifted to other modes.
- **Average Vehicle Occupancy** - Number of people
traveling in private vehicles divided by the number of private vehicle trips. This excludes transit vehicle users and walkers.

- **Average Vehicle Ridership (AVR)** - All person trips divided by the number of private vehicle trips. This includes transit vehicle users and walkers.

- **Vehicle Trips or Peak Period Vehicle Trips** - The total number of private vehicles arriving at a destination (often called “trip generation” by engineers).

- **Vehicle Trip Reduction** – the number or percentage of automobiles removed from traffic.

- **Vehicle Miles of Travel (VMT) Reduced** – the number of trips reduced multiplied by average trip length.

- **Energy and emission reductions** – these are calculated by multiplying VMT reductions by average vehicle energy consumption and emission rates.

- **Cost Per Unit of Reduction** – these measures of cost-effectiveness are calculated by dividing program costs by a unit of change. For example, the cost effectiveness of various TDM programs could be compared based on cents per trip reduced, or ton of air pollution emission reductions (Schreffler).

Given that ultimately an assessment of costs and funding opportunities will be needed, the cost effectiveness of TDM strategies also should be evaluated. One of the common evaluation measures is Benefit-Cost analysis, which divides the total program or project costs by total impacts or outcomes. The outcome of cost effectiveness can also be used comparatively to understand the relative value of TDM strategies versus other solution strategies. For example, the comparative cost of reducing vehicle demand as compared the cost of capacity improvements or expansion.

### Case Study – Measuring the Effectiveness of TDM strategies

**Pool Rewards, Commuter Connections, Washington D.C.:** The Pool Rewards project by Commuter Connections was developed to encourage drive alone commuters to try carpooling in the Washington region. Eligible participants could earn $2 per day ($1 each way) for each day they carpooled to work. The program began as a three month pilot in 2010. The pilot resulted in a decrease in 298 daily auto trips based on logged passenger trips and a daily VMT reduction (based on participants’ home and work locations) of 9,296 miles per day. According to a follow-up survey, 93 percent of participants continued carpooling after the pilot project ended. To demonstrate the cost effectiveness of the pilot, a Benefit-Cost analysis was done using the total program cost divided by the emissions reduction attributable to the program (Cost/tons per day of pollutant reduced).

Various tools, such as the Worksite Trip Reduction Model (WTRM) developed by the National Center for Transit Research and the Environmental Protection Agency (EPA) COMMUTER model, are currently available for estimating some of the benefits of several TDM and other emission reduction strategies. TRIMMS© is a spreadsheet application that estimates a more broad range of impacts and provides program cost-effectiveness measures for TDM initiatives. The EPA and National Center for Transit Research provides these modeling tools for free:

- **WTRM:** [http://www.nctr.usf.edu/worksite/](http://www.nctr.usf.edu/worksite/)
- **COMMUTER:** [http://www.epa.gov/otaq/stateresources/policy/pag_transp.htm#cp](http://www.epa.gov/otaq/stateresources/policy/pag_transp.htm#cp)
- **TRIMMS:** [http://www.trimms.com/](http://www.trimms.com/)
Additionally, the SANDAG iCommute online system allows companies and jurisdictions to measure the impacts of TDM program. The TripTracker function provides the environmental and cost savings associated with TDM initiatives at the employer level, city level and regional level.

Table 2 provides additional information on practices from other jurisdictions for evaluating various strategies or programs and the results obtained – providing quantitative, qualitative, or anecdotal evidence of a correlation between implementation of a given strategy and achievement of TDM policy goals. Many of the examples incorporated in this matrix have been extracted from Metro 2040 Modal Targets Report-Evaluations of Potential Measures for Achieving Modal Targets.
<table>
<thead>
<tr>
<th>Evaluated Strategies</th>
<th>Location</th>
<th>Program/ Mechanism</th>
<th>Results</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation Efficient Development</strong></td>
<td>San Francisco, CA</td>
<td>Study investigates the effects of transportation efficient design principles on both non-work and commuting travel by comparing modal splits between two distinctly different neighborhoods (Cervero R., Radisch C.).</td>
<td>Residents of the mixed-use, gridded neighborhood made 15 percent fewer auto trips and 22 percent more walking trips than the suburban style neighborhood. In the mixed-use, gridded neighborhood, 29 percent of those surveyed drove alone to work. In the suburban style neighborhood, 51 percent drove alone to work.</td>
<td>Surveys to determine mode split.</td>
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<td><strong>Growth Management</strong></td>
<td>Vancouver, Canada</td>
<td>As a deliberate transportation strategy, Vancouver increased housing capacity in the downtown area to reduce commuting times and congestion, in what became known as the “living-first strategy” (City of Seattle. Department of Transportation.).</td>
<td>From 1991 to 2002, the number of residents living downtown increased by 62 percent to 76,000, but car trips into downtown remained essentially constant. In 1994, walking and cycling trips made up 20% of all daily trips into the downtown and together made up the third-highest used mode behind auto and transit trips: by 1999, walking and cycling trips made up 35 percent of all daily trips and are now the most frequently used mode.</td>
<td>Surveys to determine mode shift.</td>
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<td><strong>Parking and TDM Ordinance</strong></td>
<td>Cambridge, MA</td>
<td>The Parking and Transportation Demand Management (PTDM) Ordinance passed in November 1998. The ordinance looks at how much traffic a new project will generate and then attempts to estimate how much more traffic would have been generated without the PTDM ordinance. Ordinance requires limiting traffic increases to a maximum of that number, minus ten percent (City of Cambridge).</td>
<td>61 companies/institutions covering 35,000 employees/students; 38 million VMT reduced (24%); developers are using their TDM measures as an employee recruitment perk and to attract wider retail clientele.</td>
<td>Annual monitoring and reporting by developers to City: employee and/or patron mode split; biennial counts of parking occupancy.</td>
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<td><strong>Mandatory Employer Based TDM Plans</strong></td>
<td>Minneapolis/ St. Paul</td>
<td>Evaluation of TDM Plans for office buildings (Spack Consulting). The purpose of this study was to objectively study the traffic and parking characteristics of office buildings in the Minneapolis Metropolitan Area who are actively implementing TDM Plans.</td>
<td>On average, TDM plans led to a 30 percent reduction in traffic generation rates and a 10 percent reduction in required parking stalls</td>
<td>Trip generation and parking counts during peak hours.</td>
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<td>Evaluated Strategies</td>
<td>Location</td>
<td>Program/ Mechanism</td>
<td>Results</td>
<td>Evaluation Method</td>
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<td>Subsidized Transit Pass</td>
<td>University of Washington</td>
<td>In order to manage parking and traffic congestion on campus, University of Washington has set up the U-PASS, which provides faculty, staff and students with a variety of low-cost transportation options—from buses, commuter train service and light rail, to vanpooling and discounted impromptu carpooling (University of Washington).</td>
<td>In 2010 U-PASS members were more than three times as likely as those without a U-PASS to be transit users (80% and 25% respectively). Use of U-PASS for Metro fares has remained very high (90%) and stable since the survey was implemented in 1996.</td>
<td>Survey designed to collect information on mode shift; transit utilization; carpool parking; U-PASS utilization.</td>
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<td>Transit Marketing and Promotion</td>
<td>Alameda, CA</td>
<td>TravelChoice is an innovative program to reduce driving and congestion while promoting healthy physical activity. TravelChoice used targeted outreach tactics to connect interested residents with information and incentives to add more walking, bicycle riding, public transit, and carpooling into their daily routines (City of Seattle. Department of Transportation.).</td>
<td>Drive-alone trips were reduced 14 percent, primarily due to a 34 percent increase in transit usage and a 5 percent increase in carpooling.</td>
<td>Survey data on travel mode.</td>
</tr>
<tr>
<td>Transit Marketing and Promotion</td>
<td>Government of Western Australia, Perth, Aus.</td>
<td>TravelSmart is “a social marketing program that identifies individuals who want to change the way they travel, motivates them to think about their travel options and provides them with information about how to use transit, bike, walk, or carpool for some of their trips.” (Socialdata Australia Pty. Ltd)</td>
<td>The pilot program achieved a 10 percent reduction in car travel and a 21 percent increase in public transit use.</td>
<td>Travel diaries and surveys.</td>
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<td>Carsharing</td>
<td>San Francisco, CA</td>
<td>Study looks at the effects of the Carshare program on vehicle ownership and VMT (Cervero R., Tsai Y.).</td>
<td>Two thirds of participants avoided purchasing another car, resulting in an average member VMT reduction of 47 percent.</td>
<td>Survey of Carshare members.</td>
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<tr>
<td>Evaluated Strategies</td>
<td>Location</td>
<td>Program/ Mechanism</td>
<td>Results</td>
<td>Evaluation Method/ Monitoring</td>
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<td>Parking Pricing</td>
<td>Redwood City, CA</td>
<td>Used demand based meter rates to increase parking availability and improve parking space turn-over (City of Seattle. Department of Transportation.).</td>
<td>Since March 2007, the City successfully maintains an average 18 percent availability meter rate and average parking stay of 72 minutes among downtown spaces that were previously always full all the time.</td>
<td>Parking occupancy and turnover.</td>
</tr>
<tr>
<td>Parking Generation – Traffic Generation</td>
<td>Perth, Australia</td>
<td>Perth Parking Policy introduced in 1999: Maximum levels of private parking based on land area; long term public parking restricted to peripheral areas; all parking bays (other than residential) licensed; license fees applied to off and on-street bays (Richardson).</td>
<td>Trends since policy introduced (1999-2010): 10 percent reduction in parking bays; major increase in parking price; change in mode share for access to city (1990: car driver 50%, transit 35% / 2005-2010: car driver 35%, transit 50%). Employment with the city core grew by 30 percent, transit more than doubled and car access reduced. Also footpaths have been widened and there is less delay for pedestrians.</td>
<td>Quantify before and after parking rates, number of parking bays, change in vehicle and transit ridership mode share.</td>
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<td>Congestion Pricing Area-Wide Value Pricing Projects</td>
<td>Singapore, Norway, United Kingdom (London), Germany (Stuttgart)</td>
<td>Relieve congestion during peak periods, in part through mode shift (John E. Evans IV, Kiran U. Bhatt, and Katherine F. Turnbull).</td>
<td>Singapore, mode shift of up to 30 percent for buses and 11 percent for carpools. In Trondheim, Norway, transit mode share increased by about 7 percent. In London, transit in peak periods increased by 14 percent. In Stuttgart, Germany, one-year simulation resulted in 5 – 15 percent mode shift to transit.</td>
<td>Changes in mode share measured using combination of data related to: Vehicle and/or passenger counts taken over time and survey data.</td>
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<td>Bike Parking</td>
<td>London, England</td>
<td>Survey of 348 London students about mode choice after the installation of bicycle parking racks (Transport for London).</td>
<td>61 percent of school cyclists (i.e. those who had cycled to school within the past month) said the new cycle racks have encouraged them to cycle to school more often.</td>
<td>Survey to quantify before and after bicycle trips to school.</td>
</tr>
<tr>
<td>Promotional Programs – Ten Toe Express</td>
<td>City of Portland Transportation Options</td>
<td>Ten Toe Express is a city-sponsored initiative designed to encourage walking trips (City of Portland Office of Transportation).</td>
<td>More than half of the respondents reported taking more than one new trip per week by walking instead of driving. Of new walking trips, 16 percent were for shopping, 22 percent for errands, and 13 percent to a friend’s house.</td>
<td>Travel journals and surveys. Individual trip patterns.</td>
</tr>
</tbody>
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Appendices
A. Resources

In addition to the identified and referenced national and international TDM plans, programs, and strategies discussed and sources presented in the Works Cites section, there are a number of regional resources and references available for use by local agencies and TDM professionals. While the list is not comprehensive, it does provide a starting point for research and documentation of the various TDM and TDM related plans and guidelines.

Program Support

**2050 Regional Transportation Plan and Sustainable Communities Strategy** - The 2050 RTP lays out a plan for investing an estimated $214 billion in local, state, and federal transportation funds expected to come into the region over the next 40 years. The largest proportion of the funds will go toward transit, which will receive 36 percent of the funds in the first 10 years, with 34 percent going to highway improvements (largely for the addition of HOV lanes to existing freeway corridors), and 21 percent to local roads and streets. The percentage dedicated to transit will grow each decade, up to 44 percent from 2021 to 2030, 47 percent in the third decade, and 57 percent in the last decade of the plan.

Along with the 2050 RTP, the Board adopted the Sustainable Communities Strategy (SCS). The SCS details how the region will reduce greenhouse gas emissions to state-mandated levels over time. The inclusion of the SCS is required by Senate Bill 375, and the San Diego region is the first in California to produce a regional transportation plan with an SCS.

The 2050 RTP includes plans for additional planning resources to support local jurisdictions with TDM related planning and implementation to include an Early Action Plan for active transportation projects, Complete Streets Guidelines, a Safe Routes to Transit Study and First and Last Mile Solutions to Transit studies and pilot projects.

**Menu of Policy Options to Support the Transit Network (Technical Appendix N of the Urban Area Transit Strategy in the 2050 RTP and SCS)** - This technical report of the Urban Area Transit Strategy identifies a “menu” of policies and strategies that influence transit ridership and mode share. The menu is organized into three categories: parking, land use, and funding. The report also includes information on transit fares, services, and facilities to help maximize the effectiveness of the region’s transit network.

- **2050 RTP and SCS**  
  [http://www.sandag.org/2050rtp](http://www.sandag.org/2050rtp)
- **Urban Area Transit Strategy**  

**Healthy Communities Atlas** – The purpose of the Atlas is to compile, visualize and analyze conditions related to health and wellness in the San Diego Region. Existing data were used to develop health-related indicators at the Census block group level. A GIS tool accompanies the Atlas to allow local jurisdictions to perform customized queries and geographic analysis. The Atlas Map and GIS tool can be used to identify areas that already support health and areas that need further investment in infrastructure, programs and policies.

- **Healthy Communities Atlas**  

**Regional Commuter Assistance Program**

**iCommute** – iCommuteSD.com is the San Diego Regional TDM program and the gateway to commute choices and resources in the region. The program is managed by SANDAG as part of the regional 511 transportation information program. iCommute assists commuters and employers by providing free carpool and ridematching services, a subsidized
vanpool program, transit promotion, regional support for bicycling, the Guaranteed Ride Home program, SchoolPool ridematching services for parents, and technical support for employers and agencies to establish a commuter benefit programs. iCommute offers an Employer Starter Kit to assist with developing a commuter policy and benefit program. iCommute staff works directly with employers to launch and grow their commuter program. iCommute staff also provides jurisdictions with technical support on TDM planning and policy development.

iCommute:
http://www.iCommuteSD.com

Parking Tools
Trip Generation for Smart Growth and Parking Strategies for Smart Growth provide planning tools for the San Diego Region to identify trip generation rates and parking demand associated with smart growth developments. Trip Generation for Smart Growth is accompanied by an interactive Excel spreadsheet tool designed to assist users in calculating trip reduction rates for individual smart growth developments or smart growth planning areas. The spreadsheet can be fully completed with data (by the user), or data can be provided by SANDAG Service Bureau for a fee.

- Trip Generation for Smart Growth:
- Parking Strategies for Smart Growth:
- Smart Growth Trip Generation Spreadsheet Tool:

Land Use Tools
The SANDAG Smart Growth Concept Map and Smart Growth Visualization Tool use an interactive map for planners to locate smart growth areas around the region, view photos of existing smart growth projects in these locations (where available), and answer questions such as how the map will be used, how it was prepared, and how it will be updated. Visual simulations of smart growth are also available and illustrate how communities could be transformed by smart growth development and transit-friendly designs.

- Smart Growth Concept Map and Smart Growth Visualization Tools:

Design Guidelines
There are a number of design guidelines available to local agencies to review as part of their refinements or updates to existing planning and design guideline documents. The design guideline documents provide examples of the various design topics, using text, photos, sketches, and criteria for consideration. For example, chapter 7 of the Regional Bicycle Plan presents bicycle facility design guidelines and a best practices manual to serve as a guide for planners, engineers, and designers.

- Planning and Designing for Pedestrians - Model Guidelines for the San Diego Region:
- Smart Growth Design Guidelines:
• **The Regional Bicycle Plan:**

**Funding Opportunities for Capital and Planning Projects**

**Smart Growth Incentive Program:** The TransNet Smart Growth Incentive Program (SGiP) funds transportation and transportation-related infrastructure improvements and planning efforts that support smart growth development. The SGiP awards two percent of the annual TransNet revenues (approximately $4.8 million in FY 2009) from 2008-2048 to local governments through a competitive grant program to support projects that will help better coordinate transportation and land use in the San Diego Region. The TransNet Smart Growth Incentive Program operates on a biennial funding cycle.

• **SGiP Guidelines and Information:**

**Active Transportation Grant Program** (Formerly the TDA and TransNet Bicycle and Pedestrian Projects Grant Program): The SANDAG Board of Directors allocates funds under the Transportation Development Act (TDA) and TransNet local sales tax program to support bicycle and pedestrian transportation projects in the San Diego Region through a competitive process on an annual basis.

• **Active Transportation Grant Program Guidelines and Information**

**B. Participating in TDM Outside of the Planning and Development Process**

iCommute provides free assistance and tools to help jurisdictions design and implement a customized TDM program that can be implemented at the agency and community levels.

**Commuter policies and benefit programs:** A commuter benefit program provides agency employees with an array of alternative commute choices, as well as incentives for using them. It starts by bundling together various commuting-related programs relevant to the needs of your agency and employees, and then including them in your overall benefits package. Most will save your employees money, reduce stress, and help improve the environment.

A commuter program stands side-by-side with your agency’s health benefits, helping to attract and retain talented staff, as well as improve overall employee satisfaction. Your custom plan could include everything from helping connect employees who want to carpool or vanpool with one another, to offering flexible work schedules and telework options, to providing free or reduced-cost transit passes. Some of the programs are offered free by SANDAG. Others are inexpensive or come with subsidies. For example, SANDAG provides a $400 per month subsidy for qualifying vanpools, a Guaranteed Ride Home program, and a Carpool Incentive Program.

The Commuter Benefit Starter Kit for Employers, available through iCommute, provides your agency with the tools to get started, including an overview of your options, sample policies, promotional materials, and tax benefit information. Additionally iCommute staff is available to assist agencies with developing and implementing the programs that meet your needs.
The iCommute online system offers employees free and convenient ridematching and trip tracking tools. The site also allows your agency to create customized incentive programs for rideshare participants. Its convenient reporting feature details how many of your employees are participating and measures the individual’s and agencies’ financial and environmental savings.

**TDM in the community:** There are many ways that agencies can educate the public and encourage alternatives to driving alone in their communities:

- Provide information on commuting resources. Install a kiosk with information on commute alternatives and provide information on Web sites and newsletters. Include links to iCommutesd.com.
- Encourage large employers to participate in iCommute programs and services. Provide businesses and business organizations, such as Chambers of Commerce, with information on iCommute.
- Participate in and promote annual regional events and campaigns that encourage commute alternatives to driving alone such as Bike to Work Month, Dump the Pump, Rideshare Week, and Walk and Bike to School Day.
- Promote and encourage participation in the regional SchoolPool program. SchoolPool is a free and secure online ridematching service for parents of children who attend the same school anywhere in the San Diego Region. SchoolPool is coordinated by iCommute and is a resource for schools and districts that have lost transportation resources.

### Case Study – City Sponsored TDM Programs

**Agency sponsored commuter benefit program, City of Escondido, CA:** According to a 2009 survey of employers conducted by SANDAG, the City of Escondido offers a commuter program that includes subsidized transit passes, preferred parking spots for car- or vanpool, bike racks, showers on-site, teleworking, and flexible work schedules.

**TDM in the community – In Motion, King County, WA:** In Motion programs have been rolled out in ten neighborhoods in King County. Residents register and pledge to eliminate a set number of drive-alone trips each week by using some other mode. The participants log the trips they make by taking the bus, walking, bicycling, or carpooling instead of driving alone. Registrants earn points for each SOV trip saved, and win prizes such as gift certificates to neighborhood businesses or vouchers for use toward transit fare. All registrants receive information, maps, and free bus tickets to encourage trying new travel modes to explore their community.
C. Sample Trip Reduction Ordinance – Cambridge, MA

Chapter 10.18 - PARKING AND TRANSPORTATION DEMAND MANAGEMENT PLANNING; PARKING SPACE REGISTRATION

Sections:

10.18.010 - Purpose
10.18.020 - Definitions
10.18.030 - PTDM Planning Officer
10.18.040 - Registration of All Parking Spaces
10.18.050 - Parking and Transportation Demand Management Plans
10.18.060 - Reduction in Minimum Parking and Maximum Distance Requirements
10.18.070 - Requirements Applicable to Small Projects
10.18.080 - Enforcement
10.18.090 - Evaluation

10.18.010 - Purpose

(a) It is the purpose of this Chapter to regulate and control atmospheric pollution from motor vehicles by formalizing parking and transportation demand management planning, programs, and coordination which have been ongoing for a number of years. This Chapter will reduce vehicle trips and traffic congestion within the City, thereby promoting public health, safety, and welfare and protecting the environment. This Chapter requires parking and transportation demand management (PTDM) plans for commercial parking facilities and other types of non-residential parking facilities over a specified size as set forth in 10.18.050 and 10.18.070. This Chapter also establishes a process whereby City officials will be able to track the number, use and location of off-street parking spaces in the City.

(b) A Parking and Transportation Demand Management Planning Officer will be designated by the City Manager with the responsibility for reviewing, conditioning, approving and/or denying PTDM plans. Any project subject to the requirements of this Chapter shall not be qualified to receive a permit from the Planning Board, a commercial parking permit from the Commercial Parking Control Committee, a special permit or variance from the Board of Zoning Appeal, a building permit from the Commissioner of Inspectional Services, a certificate of occupancy from the Commissioner of Inspectional Services, or an operating license from the License Commission absent written approval of its PTDM plan from the PTDM Planning Officer or evidence of registration of its parking spaces with the Department of Traffic, Parking, and Transportation.

(1211, Added, 11/16/1998)

10.18.020 - Definitions

"Commercial Parking Space" means a parking space available for use by the general public at any time for a fee. The term shall not include (i) parking spaces which are owned or operated by a commercial entity whose primary business is other than the operation of parking facilities, for the exclusive use of its lessees, employees, patrons, customers, clients, patients, guests or residents but which are not available for use by the general public; (ii) parking spaces restricted for the use of the residents of a specific residential building or group of buildings; (iii) spaces located on public streets; or (iv) spaces located at a park-and-ride facility operated in conjunction with the Massachusetts Bay Transportation Authority.

"Commercial Parking Facility" means a parking facility owned or operated by a commercial entity whose primary business is the operation of a parking facility and at which there are at least five (5) Commercial Parking Spaces.

"Commercial Parking Permit" means a (i) permit issued under chapter 10.16 of the Cambridge Municipal Code, authorizing the use of a designated number of parking spaces at a specified location as Commercial Parking Spaces; (ii) a permit or approval issued prior to the effective date of this Chapter pursuant to the Procedures, Criteria, and Memorandum of Agreement dated November 15, 1984; (iii) a Controlled Parking Facility Permit that expressly authorizes use of the parking facility for Commercial Parking Spaces; or (iv) a letter from the Director confirming the number of spaces at a specified location that were in existence and being used as Commercial Parking Spaces as of October 15, 1973.
"Controlled Parking Facility Permit" (CPFP) means a permit issued by the Director prior to the effective date of this Chapter, which authorized the construction or operation of a parking space or the construction, operation, or modification of a parking facility.

"Determination of Exclusion" means a determination made by the Director that a parking facility or a parking space did not require a controlled parking facility permit.

"Director" means Director of the Cambridge Department of Traffic, Parking, and Transportation.

"Effective Date" means November 16, 1998, the original date of final adoption of this Chapter of the Cambridge Municipal Code.

"Existing Parking Facility" shall mean a parking facility for which (i) a certificate of occupancy was issued by the Commissioner of Inspectional Services; (ii) an operating license was issued by the License Commission; or (iii) the Director issued a letter confirming the number of spaces at that location which spaces were in existence and being used as commercial parking spaces as of October 15, 1973 (a "Director’s Letter").

"New Project" means a project to construct or operate parking spaces within a new facility or an existing parking facility which will cause such facility to have a net increase in the number of spaces for which a certificate of occupancy, operating license, variance, special permit, or Director’s Letter has not been issued as of the effective date of this Chapter and which is not a park-and-ride facility operated in conjunction with the Massachusetts Bay Transportation Authority.

"Parking Facility" means any lot, garage, building or structure or combination or portion thereof, on or in which motor vehicles are parked, except any such facility used in association with or by a municipal police or fire station, and in the case of university or college campuses, the stock of parking spaces maintained within the City by the university or college which supports university or college activities within the City.

"Person" means and includes a corporation, firm, partnership, association, executor, administrator, guardian, trustee, agent, organization, any state, regional or political subdivision, agency, department, authority or board, and any other group acting as a unit, as well as a natural person.

"Planning Officer" means the City official responsible for PTDM plan reviews.

"PTDM" means Parking and Transportation Demand Management.

"Small Project" means a project to construct or operate five (5) to nineteen (19) non-commercial, non-residential parking spaces within a new facility or an existing parking facility which will cause such Facility to have a net increase in the number of spaces for which a certificate of occupancy, operating license, variance, special permit, or Director’s Letter has not been issued as of the effective date of this Chapter. To qualify as a Small Project, the total number of non-commercial, non-residential parking spaces at the parking facility must remain at or below nineteen (19).

(Ord. 1287, Amended, 09/12/2005; 1252, Amended, 09/24/2001; 1211, Added, 11/16/1998)

10.18.030 - PTDM Planning Officer.

Within thirty (30) days of the effective date of this Chapter, the City Manager shall designate a Parking and Transportation Demand Management Planning Officer who shall have responsibility for reviewing, conditioning, approving, and/or denying PTDM plans and who shall report to the City Manager. Said officer shall be a Cambridge resident within six months of employment in this position. Prior to rendering his/her determination(s), the Planning Officer shall consult with the PTDM plan applicant, the Director and the Assistant City Manager for Community Development.

(1211, Added, 11/16/1998)

10.18.040 - Registration of All Parking Spaces.

(a) No person shall build, expand, or reconfigure a parking facility for non-residential parking spaces resulting in a net increase in the number of parking spaces or a change in the use of such spaces based on the categories of use listed below at paragraphs b(v) and (vi), without first submitting a parking registration form to, and obtaining acceptance from, the Director.

(b) The registration form shall be prepared by the Director and shall be available at the offices of the Department of Traffic, Parking and Transportation. The form will require the following information:
(i) Name and address of parking facility owner;
(ii) Name and address of parking facility operator;
(iii) Address of parking facility;
(iv) Total number of existing parking spaces;
(v) Number of existing parking spaces in each of the following categories:
   - Residential
   - Commercial
   - Non-commercial
   - Customer
   - Employee
   - Patient
   - Student
   - Client
   - Guest
(vi) Number of parking spaces proposed to be added to the parking facility in each of the following categories:
   - Residential
   - Commercial
   - Non-commercial
   - Customer
   - Employee
   - Patient
   - Student
   - Client
   - Guest
(vii) Identification of any existing parking permits for the parking facility; and
(viii) Explanation of any enforcement actions against the parking facility.

(c) The Director shall accept or return a registration form to the registrant with a request for additional information within thirty (30) days after the form was filed.

(d) The License Commission shall not issue a license and the Commissioner of Inspectional Services shall not issue a building permit or certificate of occupancy for a parking facility subject to this section without evidence (i) that the registration form has been accepted by the Director; and (ii) if required, that the facility has a PTDM Plan approved by the Planning Officer.

(1252, Amended, 09/24/2001; 1211, Added, 11/16/1998)

10.18.050 - Parking and Transportation Demand Management Plans

(a) No person shall build, expand, or operate a parking facility subject to the Parking and Transportation Demand Management (PTDM) Plan requirements of this Chapter absent a PTDM Plan approved by the Planning Officer.

(b) The PTDM requirements of this Chapter shall apply to each of the following:
   (i) Any commercial parking facility for which a certificate of occupancy or operating license, variance or special
permit was not obtained prior to the effective date of this chapter;

(ii) An existing commercial parking facility at which the number of parking spaces is increased after the effective date of this chapter;

(iii) Any parking facility at which the use of existing or permitted parking spaces is changed to commercial use after the effective date of this chapter;

(iv) Any new project to build or create by change of use twenty or more non-residential parking spaces; and

(v) Any new project to expand an existing parking facility resulting in a total number of non-residential parking spaces of twenty (20) or more.

(c) The PTDM Plan shall be designed to minimize the amount of parking demand associated with the project and reduce single-occupant vehicle trips in and around Cambridge. The PTDM Plan shall be based on the following facts, projections and commitments:

(i) **Facts and Projections:**
   - Nature of development and property use;
   - Proximity of project to public transit and other non-Single-Occupant Vehicle facilities;
   - Availability of and accessibility to offsite parking spaces which could serve the project;
   - Number of employees and their likely place of origin; and
   - Type and number of patrons/users of proposed parking supply and their likely place of origin.
   - Number of vehicle trips expected to be generated by the project and description of measures to reduce associated traffic impacts on Cambridge streets; and
   - Other factors published by the Planning Officer.

(ii) **Commitments:**
   - Commitment to work with the Cambridge Office of Work Force Development;
   - Commitment to implement vehicle trip reduction measures including some or all of the following:
     - Subsidized MBTA passes and other incentives; shuttle services; ride-sharing services; bicycle and pedestrian facilities; flexible working hours; preferential parking for Low Emission Vehicles/Zero Emission Vehicles/bicycles/carpools/vanpools
     (Note: this list is not meant to preclude implementation of other types of vehicle trip reduction measures). This commitment must be accompanied by a detailed description of the measures proposed to be implemented; and
     - Commitment to establish and make reasonable efforts to achieve a specified, numeric reduction (or percent reduction) in single-occupant vehicle trips in and around Cambridge. The percent reduction will be based on PTDM practices successfully implemented in reasonably comparable environments and as identified in professional and academic literature and based on analysis of existing trip reduction measures in Cambridge.

Each PTDM Plan shall identify the total number of existing and proposed parking spaces at the facility and specify how many existing and proposed spaces fall within each of the following categories (explain how many spaces are used for multiple purposes):

- Residential
- Commercial
- Non-commercial
- Customer
- Employee
- Patient
Where the parking facility includes or proposes a combination of commercial and non-commercial parking spaces, the Plan shall specify how the parking facility will prevent commercial use of the non-commercial parking spaces.

Each PTDM Plan shall contain the following certification signed by an authorized corporate officer:

"I hereby certify that a commercial parking permit has been obtained for each space being used for commercial parking. None of the other existing or proposed parking spaces at this parking facility have been or will be available as commercial parking spaces until a commercial parking permit therefor has been obtained."

(d) The Planning Officer shall review, condition, approve and/or deny the PTDM Plan based on the above-listed facts, projections, and commitments. The Planning Officer shall issue his/her decision in writing within 60 days of receipt of the proposed PTDM Plan. The required time limit for action by the Planning Officer may be extended by written agreement between the proponent and the Planning Officer. Failure by the Planning Officer to take final action within said sixty (60) days or extended time, if applicable, shall be deemed to be approval of the proposed PTDM plan. If the project proponent elects to make a request pursuant to 10.18.060, the decision of the Planning Officer shall be expanded to include a recommendation about whether offsite parking should be allowed at distances greater than those allowed in the Zoning Ordinance and/or whether fewer parking spaces than the minimum required in the Zoning Ordinance should be allowed. Decisions of the Planning Officer may be appealed by the project proponent to a review committee composed of the City Manager, or his designee, and two other City staff members designated by the City Manager none of whom may have participated in the initial review of the Plan.

(e) The Planning Officer shall also make available sample PTDM plans which a project proponent may adapt for their project, such to approval by the Planning Officer.

(f) No permit, commercial parking permit, special permit, variance, building permit, certificate of occupancy, or operating license shall be issued for any project subject to 10.18.050 by the Planning Board, Commercial Parking Control Committee, Board of Zoning Appeal, Commissioner of Inspectional Services, or License Commission absent a written decision indicating approval from the Planning Officer of the project proponent’s PTDM Plan. Any such permit or license shall be consistent with, and may incorporate as a condition, the decision of the Planning Officer and shall include written notice of the requirements of 10.18.050 (g) and (h), below. Nothing in this ordinance shall be construed to limit the power of the Planning Board or Board of Zoning Appeal to grant variances from or special permits under the provisions of the Zoning Ordinance.

(g) Approvals issued by the Planning Officer shall be automatically transferrable by and among private parties, provided that the proposed new owner (the "Transferee") shall continue to operate under the existing PTDM Plan and shall submit to the Planning Officer within thirty (30) days of the title transfer a certification that the existing PTDM plan will remain in effect. The certification shall be submitted on a form issued by the Planning Officer and shall certify that such Transferee commits to implement the existing PTDM plan, as approved; and acknowledges that failure to implement the plan is subject to the enforcement provisions of this Chapter. Where such certification is submitted, the approved plan shall remain in effect as to the Transferee. The Transferee may elect instead to and consult with the Planning Officer within thirty (30) days of title transfer regarding appropriate revisions to the existing plan. Based on such consultation, the Planning Officer may require information from the Transferee concerning proposed changes in use of the parking facility and associated buildings and the relevant facts and projections regarding the proposed changes. Within thirty (30) days of receipt of such information, the Planning Officer may issue a written approval of the revised plan and obligations to the Transferee or the Planning Officer may require submittal of a new PTDM Plan from the Transferee for review, condition, approval and/or denial. Until such time as a new or revised plan has been approved, the existing PTDM plan shall remain in effect.

(h) Each PTDM Plan approval issued by the Planning Officer shall contain, at a minimum, the following conditions:

(i) The parking facility owner and operator each commit to implement all elements of the PTDM Plan, as approved, including annual reporting requirements, and to maintain records describing implementation of the Plan;

(ii) The City shall have the right to inspect the parking facility and audit PTDM implementation records; and
(iii) The parking facility owner and operator each commit to notify and consult with the Planning Officer thirty (30) days prior to any change in ownership, use or operation of the facility.

(1252, Amended, 09/24/2001; 1211, Added, 11/16/1998)

10.18.060 - Reduction in Minimum Parking and Maximum Distance Requirements

(a) A project proponent may elect to request that the Planning Officer include as an element of its PTDM Plan a plan for fewer parking spaces that the minimum set forth in the Zoning Ordinance. Upon the written request of the project proponent, based on an evaluation of the facts, projections, and commitments listed at 10.18.050 (c), the Planning Officer may make a written recommendation about the maximum number of parking spaces for the project. This recommendation shall remain subject to review and approval by the Planning Board or Board of Zoning Appeal as appropriate.

(b) A project proponent may elect to request that the Planning Officer include as an element of its PTDM Plan a plan for utilizing off-site parking spaces that are farther from the project site than the maximum distance requirements set forth in the Zoning Ordinance. Upon the written request of the project proponent, based on an evaluation of the facts, projections, and commitments listed at 10.18.050 (c), the Planning Officer may make a written recommendation about how many parking spaces serving the project may be appropriately located at an off-site location and at what distance from the project site. This recommendation shall remain subject to review and approval by the Planning Board or Board of Zoning Appeal as appropriate.

(1211, Added, 11/16/1998)

10.18.070 - Requirements Applicable to Small Projects

The owner or operator of each Small Project shall implement at least three (3) PTDM measures and maintain records of such implementation. A list of acceptable types of measures may be obtained from the Traffic, Parking and Transportation Department, the Inspectional Services Department, the Community Development Department, or the License Commission. The Planning Officer shall create and periodically update this list, which shall include: T-pass subsidies; bicycle parking; changing facilities; carpools/vanpools; financial incentives not to drive alone; or other similar measures.

(1252, Amended, 09/24/2001; 1121, Added, 11/16/1998)

10.18.080 - Enforcement

(a) The Director shall enforce the provisions of this Chapter. If the Director has reason to believe that any provision of this Chapter is being violated, the Director shall investigate the possible violation. If after investigation the Director determines that any provision of this Chapter is being violated, s/he shall provide a first written notice of violation to the person charged with the violation, or the duly authorized representative thereof, of the determination of violation and shall order that the violation cease within thirty (30) days of the issuance of the first written notice. If the violation is not cured within the thirty (30) days after issuance of the determination of violation, the Director may proceed to assess the fines established in this chapter as well as any other remedies available to the city. In addition to all other remedies, if the violation has not been cured within thirty (30) days after the first written notice, then the Director may order shutdown of the parking facility. Second or subsequent written notices to a facility for the same violation shall be immediately effective and shall not provide the thirty (30) day opportunity to cure contained in the first written notice. A determination and order of the Director may be appealed to the City Manager by the person charged with the violation within thirty (30) days of issuance of the Director’s determination and order.

(b) In addition to other remedies available to the City, any person who builds or modifies a parking facility without complying with the provisions of this Chapter shall be subject to a fine of up to $10.00 per day per parking space for every day that such parking space was operated without a registration accepted by the Director or without a PTDM Plan approval issued by the Planning Officer or in non-compliance with an approved PTDM Plan. On a determination, after investigation, by the Director that this Chapter is being violated, and the exhaustion of any appeal to the City Manager in accordance with (a) above, the Director shall take steps to enforce this chapter by causing complaint to be made before the district court and/or by applying for an injunction in the superior court.

(c) In addition to other remedies available to the City, a determination that a facility is operating in violation of the provisions of this Chapter shall be ground for revocation by the Director of the facility’s parking permit or other form of approval.
(d) The Planning Officer shall have independent authority to inspect a parking facility and audit its records to determine whether it is in compliance with its PTDM Plan. The Planning Officer shall issue a finding of non-compliance in writing and provide copies to the parking facility owner and operator and to the Director.

(1211, Added, 11/16/1998)

10.18.090 - Evaluation

The PTDM Planning Officer shall prepare a report annually on the status and effectiveness of the implementation of this Ordinance.

(1300, Amended, 09/11/2006; 1252, Amended, 09/24/2001; 1211, Added, 11/16/1998)

D. Sample Employer Trip Reduction Ordinance – Santa Monica

**TRANSPORTATION MANAGEMENT ORDINANCE 1604 - SUMMARY**

The City of Santa Monica's Transportation Management Ordinance #1604 was enacted by the City in 1990 in an effort to reduce traffic congestion and improve air quality. The Ordinance affects employers with ten employees or more and focuses on reducing the number of employee commute trips generated by Santa Monica employers.

**Employer Requirements:**

Employers are required to submit annual transportation plans to the City. Employers are notified by mail each year before their plan due date and provided with all necessary plan forms.

Employers of 10 - 49 employees are required to attend a City-sponsored workshop and submit a worksite Transportation Plan (WTP) to the City each year. The WTP outlines how the employer will provide all employees with ridesharing information.

Employers of 50 employees or more are required to designate a certified Employee Transportation Coordinator (ETC) and submit an annual Emission Reduction Plan which implements one of the following options:

**Employee Trip Reduction Plan** This option is an incentive-based plan which focuses on reducing employee trips to and from the worksite. Employers must survey their employees to establish commute patterns for the morning (6:00 a.m. to 10:00 a.m.) and for the evening (3:00 p.m. to 7:00 p.m.). A 75% employee response rate is required. After surveying and establishing an Average Vehicle Ridership (the number of employees per car that arrives at the worksite), employers choose the incentives and marketing strategies that will encourage their employees to rideshare to and from work rather than drive alone. Employers must submit a plan that they believe will result in an AVR of 1.5 employees per vehicle.

**Emission Reduction Plan (ERP)** Mobile Source Emission Reduction Credits (MSERC) Employers may purchase Mobile Source Emission Reduction Credits from a certified Broker in lieu of an ETRP. Employers may survey employees to determine their Average Vehicle Ridership (AVR) and purchase MSERCs to bridge the shortfall between their AVR and their target AVR of 1.5 or not survey and purchase MSERCs for an AVR of 1.0

**Average Vehicle Ridership (AVR):**

AVR is a measure of persons per vehicle calculated by dividing the number of employees arriving or departing the worksite by the number of vehicles used to commute to and from the worksite. AVR is calculated using information about employee commute patterns collected over a one-week survey period. The AVR attainment goal is 1.5 persons per vehicle for the morning commute period (6:00 a.m. to 10:00 a.m.) And the evening commute period (3:00 p.m. to 7:00 p.m.)

**Certified Training Requirements**

Employers of 10 to 49 employees will be notified by mail to attend a City-sponsored training workshop. Each employer must attend one initial training workshop.

Employers of 50 to 249 employees must designate an employee to attend a workshop provided by a City-certified trainer.
Employers of 250 or more employees must receive certification by the South Coast Air Quality Management District. Training dates and registration information is available at: http://www.aqmd.gov/trans/traing.html

Consultants:

Employers may hire a City-approved consultant to act as the Employee Transportation Coordinator. Contact the City’s Transportation Management Office for a list of City-approved consultants.

Annual Transportation Impact Fees: Employers are required to pay a per employee fee. For purposes of calculating fees, the following employees are considered exempt:

- Part-time employees working fewer than 4 hours per week
- Temporary employees
- Contract employees
- Seasonal employees
- Employees who are based in Santa Monica but report to other worksites outside of the City

Employers of 10-49 employees pay a specific fee per employee.

Employers of 50 or more employees: Employers who meet and maintain an AVR of 1.50 for the morning and evening windows receive a fee discount of 40 to 60 percent.

Employers of 50 or more employees filing an MSERC plan pay a specific fee.

Multi-site Employers:

Employers with more than one worksite located within the City of Santa Monica may file one multi-site Emission Reduction Plan or Worksite Transportation Plan.

Employers of 250 or more with one worksite in the City of Santa Monica and one or more worksites of over 250 employees located outside of Santa Monica but within the South Coast Air Basin may choose to comply with the City’s Ordinance 1604 or the South Coast Air Quality Management District’s Rule 2202. Employers choosing to comply with Rule 2202 must file an exemption with the City.

Parking Cash Out

Employers who fall under the purview of AB2109 (Parking Cash Out), must implement a parking cash out plan as part of their Emission Reduction Plan. Employers who fail to do so will have their Emission Reduction Plan disapproved.

Enforcement

Employers who do not comply with the requirements of the Transportation Management Ordinance will be subject to the following enforcement:

The first violation of a plan year will result in a warning notice. Each subsequent violation in a plan year will result in a violation notice. A violation notice carries a fine of $5.00 per employee per day and possible revocation of a City of Santa Monica business license.
6. Works Cited


City of Ventura. "Downtown Ventura Mobility and Parking Plan." 2006. [http://www.cityofventura.net/files/community_development/planning/planning_communities/resources/downtown/Ventura_FinalMobility+PkgMngmntPlan.04.06_Accepted.pdf].


Saanich B.C. **Transit-Oriented Development Case Study, Short Street Project.** 2006.


[http://www.vta.org/ecopass/]


San Diego Association of Governments

TRANSPORTATION COMMITTEE

May 18, 2012

AGENDA ITEM NO.: 7

Action Requested: RECOMMEND

PROPOSED BUDGET AMENDMENT: LOW-FLOOR LIGHT RAIL TRANSIT VEHICLE PROCUREMENT

File Number 1210080

Introduction

The Low-Floor Light Rail Transit (LRT) Vehicles Project (CIP 1210080) is funding procurement of 57 new low-floor light rail vehicles (LRVs) through an agreement with the Metropolitan Transit System (MTS). MTS has contracted with Siemens Industry Inc. to manufacture LRVs with an option to procure additional vehicles. The initial 57 LRVs are currently in production, and a number of these vehicles have already been delivered, commissioned, and put into revenue service. MTS recommends exercising the option to procure additional vehicles by increasing the order at this time by eight vehicles at a total cost of $30.9 million, pending MTS Board action on May 17, 2012.

Funds for the additional vehicles would come equally from funding provided by MTS and from TransNet funding available for the Early Action Program. Attachment 1 shows the proposed budget changes, which would be incorporated in the Draft FY 2013 Program Budget and Overall Work Program scheduled for SANDAG Board of Directors approval at its June 22, 2012, meeting. This change also will be reflected in the 2012 Regional Transportation Improvement Program Update.

Discussion

MTS is procuring 57 low-floor LRVs from Siemens Industry, Inc. through an agreement with SANDAG as part of the Blue and Orange Line Trolley Improvement Corridor project. These new LRVs will provide sufficient low-floor capacity to run at least one low-floor LRV in each regular revenue service train. The Blue Line Trolley operates with three vehicle trains throughout the day. The Orange Line operates with three-vehicle trains during peak periods and with two-vehicle trains during off-peak periods and weekends. The 57 LRVs are the minimum necessary to provide low-floor cars on each train (i.e., two per train on the Blue Line, and one per train on the Orange Line). Trolley ridership is increasing, and the Orange Line now is requiring three-vehicle trains all day. Eight additional vehicles would allow MTS to have two low-floor LRVs, one on each end of every train with a high-floor vehicle in the middle and maintain an adequate spare ratio for maintenance and special event service. This train configuration helps operations by allowing all trains to stop at a

Recommendation

The Transportation Committee is asked to recommend that the Board of Directors: (1) approve a budget revision to increase the Low-Floor LRT Vehicles Project (CIP 1210080), from $240,243,000 to $271,143,000 in the proposed FY 2013 Program Budget to procure eight additional new low-floor LRVs (Attachment 1); and (2) authorize the Executive Director to execute an amendment to the existing Memorandum of Understanding between SANDAG and MTS Regarding Funding and Procurement of Low-Floor Light Rail Vehicles (SANDAG Contract No. 5001344), in substantially the same form as shown in Attachment 3.
center location on the platform – providing a consistent boarding position for Trolley patrons. The procurement of the additional eight new LRVs also would allow MTS to retire all of its U2 model high-floor vehicles, which are the oldest in the fleet and increasingly difficult to maintain because of age, mileage, and a growing number of obsolete parts. Replacing these U2 vehicles with new low-floor LRVs would improve reliability and reduce maintenance costs for the overall system.

Siemens currently has an opening in the plant production schedule that allows it to add the vehicles to production at a price below the original contract price. In negotiations with Siemens, MTS established a new cost per vehicle of $3,844,520 (less than the $3,906,989 per vehicle cost of the original 57 LRVs). Siemens is able to offer this price because no additional design would be required. In addition, if the vehicle order is executed this spring, Siemens would be able to take advantage of existing component orders and plant availability.

Proposed Funding

At its April 19, 2012, meeting, the MTS Board of Directors approved authorizing its Executive Director to pursue procuring seven additional vehicles contingent on approval of an amendment to the SANDAG Low-Floor LRT Vehicles Project budget (CIP 1210080) (Attachment 2). The MTS Board of Directors will be considering the procurement of one additional vehicle (for a total of eight) at its May 17, 2012, meeting. A corresponding amendment to the existing Memorandum of Understanding between SANDAG and MTS also would be needed (Attachment 3).

As stated above, funding would come in equal amounts from SANDAG and MTS. In April, the California Transportation Commission approved more than $34 million in additional Proposition 1B Corridor Mobility Investment Account funds for SANDAG. These funds will be programmed for the Interstate 15/State Route 76 project, freeing up local TransNet funds. Staff proposes programming a portion of these TransNet funds toward the procurement of the additional low-floor LRVs.

JIM LINTHICUM
Director of Mobility Management and Project Implementation

Attachments: 1. Proposed FY 2013 Capital Improvement Program Budget Amendment for CIP 1210080
   2. April 19, 2012, MTS Board of Directors Report - Item #30 Exercise Option to Purchase 7 Light Rail Vehicles from Siemens Industry, Inc.
   3. Amendment No. 3 to Memorandum of Understanding between SANDAG and MTS Regarding Funding and Procurement of Low-Floor Light Rail Vehicles, SANDAG Contract No. 5001344

Key Staff Contact: John Haggerty, (619) 699-6937, John.Haggerty@sandag.org
# PROPOSED FY 2013 BUDGET

## Project Information

- **Project Number:** 1210080
- **RTIP Number:** SAN67
- **Project Name:** Low-Floor LRT Vehicles
- **Corridor Director:** Bruce Schmith
- **Project Manager:** Bruce Schmith
- **PM Phone Number:** (619) 595-5613

## Project Description

Procurement of 65 new low floor light rail vehicles. These vehicles will allow MTS to run two low floor vehicles in all regular service three car trains, with one single high floor vehicle in the center.

## Project Features

- Low floor vehicles with bridge plates on specific vehicle doors for self loading or mobility devices and bicycles.

## Major Milestones

- Draft Environmental Document: N/A
- Final Environmental Clearance: N/A
- Ready to Advertise: N/A
- Begin Construction: Sep-09
- Open to Public: Oct-13
- Close-Out: Apr-14

## SANDAG EXPENDITURE PLAN ($000)

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## FUNDING PLAN ($000)

### FUNDING SOURCE

#### STATE:

- **85130001 Prop 1B-PTMISEA**: $2,169, $7,545, $10,000, $17,940, $3,743, $0, $0, $0, $0, $0, $0, $0, $41,397
- **8513001 Prop 1B - SLPP**: 0, 31,097, 0, 0, 0, 0, 0, 0, 0, 0, 0, 31,097

#### LOCAL:

- **92006000 MTS**: 32,384, 26,379, 35,723, 20,000, 45,556, 0, 0, 0, 0, 0, 0, 0, 160,042
- **91000100 TransNet -MC AC**: 31,097, 11,166, 39,395, 32,359, 49,299, 0, 0, 0, 0, 0, 0, 0
- **91000100 TransNet -MC**: 12,420, 18,677, 0, 7,510, 0, 0, 0, 0, 0, 0, 38,607

**TOTAL:** $78,070, $94,864, $85,118, $13,091, $0, $0, $0, $0, $0, $0, $0, $271,143
Agenda Item No. 30

MEETING OF THE METROPOLITAN TRANSIT SYSTEM
BOARD OF DIRECTORS

April 19, 2012

SUBJECT:

EXERCISE OPTION TO PURCHASE 7 LIGHT RAIL VEHICLES FROM SIEMENS INDUSTRY, INC. (KAREN LANDERS AND WAYNE TERRY)

RECOMMENDATION:

That the Board of Directors authorize the Chief Executive Officer (CEO) to exercise an option for 7 additional SD-8 light rail vehicles (LRVs) under MTS Doc. No. L0914.0-10 (as amended) subject to identification of funding. The option price shall not exceed $3,844,520 per LRV (including 7.75% sales tax).

Budget Impact

The total cost for the 7 LRVS, assuming a sales tax rate of 7.75%, would be $26,911,640. In the event that the sales tax is raised in November 2012, the sales tax portion would increase. Prior to exercise of option, the CEO would identify a source of available funds for this Capital Improvement Project.

DISCUSSION:

MTS has a current contract with Siemens Industry, Inc. for the purchase of 57 new low floor light rail vehicles (LRV), plus an option for 8 additional vehicles (MTS Doc. No. L0914.0-10, as amended). The contract expires upon delivery of the 57 LRVs, estimated at June 30, 2013. MTS may exercise its option to purchase the 8 additional LRVs at any time during the contract. The option price is subject to negotiations. Recent negotiations with Siemens resulted in a discounted price for the option LRVs if MTS exercises its option within enough time for Siemens to remain in continuous production of the MTS LRVs. Because many parts needed for this production have significant lead times (up to 15 months), Siemens has informed MTS that its discounted pricing is only available if the option is exercised by the end of April 2012. The
discounted pricing results in a $437,284 savings over the current contract price for the 7 LRVs.

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<td>3,625,976</td>
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<tr>
<td>7.75% Sales Tax</td>
<td>7.75% Sales Tax</td>
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<td>276,520</td>
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<td>Total Cost of Option LRV</td>
<td>Total cost per LRV</td>
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<tr>
<td>$3,844,520 per LRV</td>
<td>$3,906,989</td>
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<td>Total Option Cost for 7 LRVs</td>
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<tr>
<td>$26,911,640</td>
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<tr>
<td>Option Price savings per LRV</td>
<td>(57,976) before tax</td>
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<tr>
<td>Option Price savings per LRV</td>
<td>(62,469) with tax</td>
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<tr>
<td>Total Option Price savings</td>
<td>(437,284) with tax</td>
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Currently, ridership on the Orange Line is serviced daily with 3-car trains during the morning and afternoon peak-periods and with 2-car trains during the midday base period. The ridership level on this line segment has steadily increased and will soon necessitate operation of 3-car trains all day (similar to current Blue Line operations). The procurement of an additional 7 S70 LRVs would allow for the operation of 3-car trains with low-floor LRVs on each end of a high-floor SD 100 LRV. This configuration also precludes the need for deploying the wheelchair lift on the older SD 100 LRVs and provides additional capacity for wheelchairs.

Paul C. Jablonski  
Chief Executive Officer

Key Staff Contact: Karen Landers, 619.557.4512, Karen.Landers@sdmts.com

APRIL19-12.30: PURCHASE 7 SIEMENS LRVs. KLANDERS
AMENDMENT 3

MEMORANDUM OF UNDERSTANDING
BETWEEN SAN DIEGO ASSOCIATION OF GOVERNMENTS
AND SAN DIEGO METROPOLITAN TRANSIT SYSTEM
REGARDING FUNDING AND PROCUREMENT OF LOW-FLOOR LIGHT RAIL VEHICLES

SANDAG CONTRACT NO. 5001344

This Amendment 3 to the Memorandum of Understanding ("MOU") is made and entered into
effective as of this _____ day of May 2012, by and between the San Diego Association of Governments
("SANDAG") and the San Diego Metropolitan Transit System ("MTS").

AGREEMENT

WHEREAS, MTS has entered into a contract and various amendments with Siemens Industry, Inc. to
purchase 57 ultrashort low-floor light rail vehicles (S70), related replacement parts and modifications to
MTS's existing fleet to ensure compatibility with the new S70 vehicles (see MTS Doc. Nos. L0914.0-10
through L0914.7-10)(collectively "Siemens Contract");

WHEREAS, this MOU and its amendments have previously authorized not-to-exceed funding for
the Siemens Contract and related SANDAG supporting work of $240,000,000 (SANDAG LOW-FLOOR
VEHICLE PROCUREMENT PROJECT– CIP 120080);

WHEREAS, on April 25, 2012, MTS amended the Siemens Contract to exercise its option to
purchase 8 additional ultrashort S70 light rail vehicles (LRVs) at discounted pricing (see MTS Doc.
No. L0914.8-10), for a new total of 64 ultrashort S70 LRVs; and

WHEREAS, the parties agree that these amendments to the Siemens Contract, which total
approximately $30,900,000, are in the best interest of the parties and that therefore the funding SANDAG
is to provide to MTS for the Project should be increased accordingly;

NOW THEREFORE, in consideration of the mutual promises set forth herein, the parties agree as
follows:

1. To increase the not-to-exceed amount for the manufacture, delivery, sales tax, testing and
commissioning, training, and supply of spare parts and special tools for 65 new ultrashort S70 LRVs,
including changes or claims resulting from any contract(s) with Siemens or its suppliers, contractors,
or consultants involved in the manufacture, delivery, testing, commissioning, or training directly
related to the manufacture and acceptance of these LRVs from $240,000,000 as approved in
Amendment 2 to this agreement to $271,143,000. In the event that MTS believes that this amount
will be exceeded, it will notify SANDAG, and the parties will meet to discuss whether an amend-
ment to this MOU is appropriate.

2. The parties have agreed upon the funding distribution for the Project shown in Exhibit A of this
agreement for the Low-Floor Vehicle Procurement Project, SANDAG CIP 1210080. The specific
sources of funding are subject to change at the discretion and mutual agreement of the MTS and
SANDAG finance departments, and in accordance MTS and SANDAG governing policies.
Notwithstanding the distribution of funding obligations set forth in Exhibit A, the parties recognize that all or part of the MTS funding is State Prop 1B bond funds which are subject to delay and likely will not be fully available at the time payments are required under the Siemens Contract. SANDAG has agreed to fund the Siemens Contract as invoices become due, subject to MTS's obligation to reimburse SANDAG with Prop 1B funds or other funds as agreed within 90 calendar days of when MTS receives Prop 1B fund distributions up to an amount not less than $144,592,000.

3. The parties agree that the amounts in Exhibit A, column B, “Amendment #3 Additional Funding,” are not funded with Prop 1B and not subject to delay in state bonding; therefore, MTS agrees to expend not less than $15,450,000 in FY 2013 for procurement of low-floor vehicles in addition to Prop 1B reimbursement in accordance with Section 2 above.

All other terms and conditions of the original MOU shall remain the same.

IN WITNESS WHEREOF, the Parties hereto have executed this Amendment 3 effective on the day and year first above written.

SAN DIEGO ASSOCIATION OF GOVERNMENTS

GARY L. GALLEGOS
Executive Director

APPROVED AS TO FORM:

Office of General Counsel

IN METROPOLITAN TRANSIT SYSTEM

PAUL C. JABLONSKI
Chief Executive Officer

APPROVED AS TO FORM:

Office of General Counsel
## Exhibit A
### Vehicle Funding Allocation
#### Low-Floor Vehicle Procurement Project (CIP 1210080)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
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<td>FY 2012* Budget Funding</td>
<td>Amendment #3</td>
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<td>$95,651,000</td>
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<td>Total:</td>
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*Amendment #2 to this MOU revised the total agreed budget amount to $240,000,000. The SANDAG Board revised the budget with the approval of the FY 2012 Program Budget for the Low-Floor Vehicle Project to $240,243,000.
Introduction

The Transportation Development Act (TDA) provides one-quarter percent of the state sales tax for operating and capital support of public transportation systems and non-motorized transportation projects. SANDAG, as the designated Regional Transportation Planning Agency, is responsible for the allocation of TDA funds to the region’s cities, the County, and transit operators.

Pursuant to California Public Utilities Code Section 99244, an operator can be allocated no more in FY 2013 than it was allocated in FY 2012 unless SANDAG determines that the operator made a reasonable effort to implement the productivity improvement recommendations adopted by the Board of Directors for the current fiscal year. This reasonable effort is developed through the evaluation of 3-year trend data and through a determination of whether or not those trends are positive.

Discussion

Productivity Improvement Recommendations

The Productivity Improvement Program includes all of the performance measures explicitly stated in the state TDA Manual Section 99246(d). Additionally, SANDAG tracks multiyear trend analysis since it is recognized that steps taken by the transit agencies to improve system performance often take several years to be fully realized. The Productivity Improvement Program for FY 2012 included the evaluation of the following TDA performance measures over a three-year (12 quarter) period:

- Operating Cost Per Passenger (adjusted for annual inflation) – measures cost-effectiveness
- Operating Cost Per Revenue Hour (adjusted for annual inflation) – measures cost-efficiency
- Passengers Per Revenue Hour – measures service productivity
- Passengers Per Revenue Mile – measures service productivity
- Revenue Hours Per Employee – measures labor productivity
- Farebox Recovery Ratio – measures service cost-efficiency

Recommendation

The Transportation Committee is asked to recommend that the Board of Directors find that Metropolitan Transit System (MTS) and North County Transit District (NCTD) made a reasonable effort to implement productivity improvements during FY 2012.

1 Based on the TDA Manual Sections 6633.2 and 6633.5, this measure includes the evaluation of the last four quarters of available data (Quarter 2 of FY 2011 through Quarter 2 of FY 2012).
These performance indicators are measured separately for fixed-route (MTS Trolley, MTS Bus, NCTD SPRINTER, NCTD COASTER, and NCTD BREEZE Bus) and Americans with Disabilities Act of 1990 (ADA) Paratransit services (MTS ADA and NCTD ADA).

The indicators help determine if the agency is obtaining the desired results from the system and if overall performance is improving based on updated regional strategies or service operation plans. Also, these indicators help the transit agencies determine where improvements can be made. These improvements can be incorporated into each operator’s Service Improvement Plan, which are included in the Coordinated Public Transit - Human Services Transportation Plan prepared by SANDAG.

Performance trends were evaluated in FY 2012 to determine whether the transit agencies improved their performance in light of external circumstances (e.g., fuel prices and reduced state funding levels for transit). To facilitate a greater understanding of each individual service (MTS Bus, MTS Paratransit, MTS Trolley, NCTD Breeze, NCTD COASTER, NCTD SPRINTER, and NCTD Paratransit), a composite index of the six TDA performance measures is included in the Productivity Improvement Program to help determine overall trends.

Attachment 1 includes the composite evaluation of each service from Quarter 2 of FY 2009 to Quarter 2 of FY 2012. The overall composite charts are followed by charts that specifically illustrate the percent change through the reporting period as discussed below.

**MTS FY 2012 Performance**

The results of the FY 2012 MTS performance trend analysis indicate that:

- **MTS Trolley** performance declined by 4 percent based on the Quarter 2 FY 2009 to Quarter 2 FY 2012 analysis. The main reason for the slight decline was a 13 percent decrease in Trolley ridership over the three-year period, due primarily to the economic recession that led to large job losses in the San Diego region. As a result, operating costs per passenger have increased, and passenger productivity (passengers per revenue hour and mile) also declined. Despite the drop in ridership over the three year period, the trolley farebox recovery rate remained stable resulting in a recent four-quarter average of 51 percent. This farebox recovery is well above the 36 percent system average and almost double the national light rail average of 28 percent. This was largely due decreased operating costs coupled with a 4 percent increase in fare revenue over the evaluation period. Trolley ridership has begun to increase, with FY 2011 ridership up 3.8 percent over the previous year, and year-to-date ridership up 5.1 percent.

- **MTS Bus** overall performance improved by 1 percent through the Second Quarter of FY 2012. Factors contributing to the improved performance included large increases in productivity from a 10 percent reduction in revenue hours and miles without proportionately affecting ridership (which increased by 1 percent). Bus ridership had a year to date FY 2012 increase of 5.9 percent. Overall improvements also were seen in labor productivity.

- **MTS ADA** overall performance declined by 13 percent over the past 12 quarters. Positive signs were seen in productivity (passengers per revenue mile and revenue hour). Additionally, operating costs slightly increased while ridership, revenue hours and revenue miles declined. The accounting process for overhead, however, changed during this time period. For fiscal years 2009 and 2010, overhead expenses were allocated as an annual amount in the fourth quarter of each fiscal year. Starting in FY 2011, MTS began allocating overhead monthly, so
the beginning of the analysis period had no overhead costs. MTS also changed the cost allocation methodology used during this evaluation cycle. Each operator allocated costs using passenger count ratios in fiscal years 2009 and 2010. Since the small passenger volume within Paratransit does not accurately reflect the effort required to serve these passengers, the methodology for the cost allocation was changed to revenue miles. This spreading of the overhead costs created a more equitable cost distribution among the operators but created a challenge in evaluating composite trends for the MTS ADA service.

- **MTS Farebox Recovery Rates** exceeded the minimum TDA requirements for fixed-route and ADA Paratransit services. TDA requirements include a minimum annual farebox recovery of: 31.9 percent for fixed-route rail and bus (41.1 percent was achieved); 20.0 percent for Premium Express (46.8 percent achieved); and 10 percent for MTS ADA services (13.3 percent was achieved).

**NCTD FY 2012 Performance**

The results of the FY 2012 NCTD performance trend analysis indicate that:

- **NCTD COASTER** overall performance declined by 5 percent during the last 12 quarters due mainly to declines in ridership and passenger fares coupled with increased operating costs, revenue hours and Full Time Equivalent Employees (FTEs). However, despite high unemployment levels, ridership has increased over the last four quarters by 26 percent, as a result of several factors, including increased fuel prices, increasing traffic congestion, increased marketing efforts, and the reduction in passenger fares which was introduced in the Third Quarter of Fiscal Year 2011. It is important to note that while the overall composite performance is slightly down for the three year term, performance has been improving since the reduction of COASTER passenger fares.

- **NCTD SPRINTER** performance improved by 7 percent over the last 12 quarters. The SPRINTER performance improvement was primarily due to the decline in operating costs matched by increased passengers, revenue hours and fares. This yielded improvements in cost-effectiveness and productivity. Farebox recovery also was up 7 percent in the year-over-year analysis.

- **NCTD BREEZE** overall performance did not change over the 12 quarter evaluation period. Gains in cost-effectiveness were offset by slight reductions in farebox recovery. BREEZE farebox recovery, however, has improved by 2 percent over the last two years. Service and labor productivity held constant from the Quarter 2 FY 2009 to the Quarter 2 FY 2012.

- **NCTD ADA service** improved by 13 percent over the previous 12 quarter period. This was the result of large improvements in cost-effectiveness and productivity based on increased passengers (+8 percent), declining costs (-21 percent), increased revenue hours (+10 percent) and increased fares (+1 percent).

- **NCTD Farebox Recovery** minimum TDA requirements were exceeded for fixed-route and ADA Paratransit services. TDA requirements include a minimum annual farebox recovery of: 18.8 percent for fixed-route (25.0 percent was achieved); and 10 percent for ADA (13.7 percent was achieved) services.
FY 2012 Productivity Improvement Program

Based on the results discussed above, the conclusion of the performance analysis is that both MTS and NCTD have made reasonable efforts toward achieving their FY 2012 productivity recommendations. NCTD also is currently implementing an operations analysis (Mobility Plan) that will be reflected in next year’s Productivity Improvement Program results.

TDA Triennial Audit Recommendations

In addition to the three-year performance monitoring associated with the annual TDA claim, the triennial performance audit included the development of improvement recommendations for the transit agencies. The most recent performance audit completed in April 2010 included some recommendations on possible strategies to improve efficiency and effectiveness for both transit operators. These recommendations and the associated MTS and NCTD action plans to implement them (from Form B of the 2012 TDA Claim) were updated by MTS and NCTD and are included in Attachments 2 and 3, respectively.

CHARLES “MUGGS” STOLL
Director of Land Use and Transportation Planning

Attachments: 1. FY 2012 Productivity Improvement Results – Composite Evaluation
2. MTS Annual TDA Claim Form
3. NCTD Annual TDA Claim Form

Key Staff Contact: Phil Trom, (619) 699-7330, Phil.Trom@sandag.org
FY 2012 Productivity Improvement Results
Composite Evaluation

Figure 1: Fixed Route TDA Performance Composite Index

Figure 2: ADA TDA Performance Composite Index
SANDAG Staff Member: Philip Trom
Date Completed:  
Operator: Metropolitan Transit System (MTS)  
Date of Last Performance Audit: April 15, 2010

<table>
<thead>
<tr>
<th>Page</th>
<th>Performance Audit Recommendation(s)</th>
<th>Actions Taken to Implement Recommendations</th>
</tr>
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</table>
| 36   | 1. MTS and Chula Vista Transit (CVT) should consider identifying a practice that would ensure that the data submitted in the State Controller’s Reports for CVT equate to total revenues, costs and operating statistics for the CVT service. | The State Controller’s report is prepared by finance staff at the City of Chula Vista not MTS staff. This information is prepared using the best information they have available at the due date of the report, October 31. Normally financial information is not complete within the City of Chula Vista until late December. As such, the information used to prepare the State Controller’s Report will normally be incomplete at the time of submission. MTS staff has requested that the City of Chula staff do the following:  
  • Standardize report formatting similar to MTS for both the actual and budgeted figures.  
  • Submit a copy of the State Controller’s Reports for CVT to MTS’s Finance Department prior to submission to the State  
  • Provide a reconciliation of the City of Chula Vista State Controller’s report to their audited financial statements to MTS within sixty days of the publication of the City of Chula Vista’s Combined Annual Financial Report (CAFR). |
| 37   | 2. MTS should work with SANDAG to verify the accuracy of performance data reported to SANDAG. | MTS management response: Based on the previous TDA Triennial Audit recommendation, MTS and SANDAG revised their procedures for reporting data. The revised procedure includes reporting the data later in order to allow the data to be collected in its entirety and validated by MTS. This has resulted in fewer changes after the data has |
been transmitted to SANDAG. When there are changes made after transmittal, they are highlighted for transparency purposes.

The draft audit report noted a formula error in the Full Time Equivalent section of the form. The fiscal year totals were off due to a minor calculation error. While the error caused the fiscal year data to be incorrect (within the formula, there was a division by 2 instead of by 4), the quarterly data in the same report was correct. The spreadsheet has been corrected and the error will not be made in future reports.

MTS Trolley has experienced an increase in operating cost per service hour and service mile over the previous audit period. The increased operating cost is due to a number of factors:

- Five minutes of travel time was added to the Blue Line at the end of FY 2006. The additional time was added in response to an increasing number of wheelchair lift delays and a limited capacity for wheelchairs on the U2 Light Rail Vehicle (LRV). The change in travel time required one additional train set, increasing the number of base period train sets from eight to nine. This change directly increased the cost per service hour and per service mile.

- The opening of the Green Line in FY 2006 required travel time from the yard to Old Town for operator reliefs. Prior to opening all reliefs were made at the trolley yard and no travel time was part of the service day. Travel between Old Town and the yard is 23 minutes.

- In the first half of the audit period, MTS Trolley was understaffed in train operators and had a high percentage of overtime pay. MTS Trolley has corrected this and has a program in place to stay fully staffed in the future, including use of additional part time employees. Due to favorable conditions in the labor agreement, the agency reduces operating costs by increasing part time staff in order to decrease overtime. Part time operators are also frequently a more cost-effective choice.

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<th>Performance Audit Recommendation(s)</th>
<th>Actions Taken to Implement Recommendations</th>
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</thead>
<tbody>
<tr>
<td>37</td>
<td>3. MTS should identify ways to maintain the cost-efficiency of MTS Trolley service.</td>
<td>MTS Trolley has experienced an increase in operating cost per service hour and service mile over the previous audit period. The increased operating cost is due to a number of factors:</td>
</tr>
</tbody>
</table>

- Five minutes of travel time was added to the Blue Line at the end of FY 2006. The additional time was added in response to an increasing number of wheelchair lift delays and a limited capacity for wheelchairs on the U2 Light Rail Vehicle (LRV). The change in travel time required one additional train set, increasing the number of base period train sets from eight to nine. This change directly increased the cost per service hour and per service mile.

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- In the first half of the audit period, MTS Trolley was understaffed in train operators and had a high percentage of overtime pay. MTS Trolley has corrected this and has a program in place to stay fully staffed in the future, including use of additional part time employees. Due to favorable conditions in the labor agreement, the agency reduces operating costs by increasing part time staff in order to decrease overtime. Part time operators are also frequently a more cost-effective choice.
when staffing for the many special events that occur in San Diego. Part time staff is also used for other needs such as extra revenue collection, outreach, or construction related wayside safety.

- Due to the age of the Blue Line to San Ysidro and some parts of the Orange Line, MTS Trolley added some additional maintenance of way personnel during the audit period to increase track inspection, more frequent tamping, rail grinding, and tie replacement. The Blue Line while thirty years old still has a number of miles of 90lb rail, worn rail in many of the curves, and very old ties. Additional maintenance has been required to keep the line in a good state of repair. Rehabilitation of the Blue Line began in earnest in 2010.

MTS Trolley continues to strive to drive down costs. Some solutions under way:

- MTS has started a capital project to bring the Green Line to downtown. Included in the project is a new operating plan for the Blue, Green, and Orange Lines. This plan will eliminate the extra train set on the Blue Line and the long turn time at San Ysidro. It will also eliminate the travel time for reliefs on the Green Line.

- MTS has ordered new LRVs to replace the U2s. The new LRVs have better performance, are more reliable, and can carry up to four times the wheelchairs.

- MTS Trolley will continue to look at rules, policies, and procedures for ways to reduce cost.
4. MTS should develop a strategic plan for its provision of contracted services.

MTS is restricted in the amount of service it may contract with an outside provider since the passage of California Assembly Bill 117 (Kehoe, 2003). The law essentially prohibits MTS from contracting out service now operated by San Diego Transit Corporation (SDTC). New services are not bound by the same restriction and therefore staff analyzes any new service to determine if the service should be operated in-house by SDTC or contracted out. The analysis included location of the service and proximity to operations and maintenance facility bases, cost, capability of the entity to expand service, type of vehicles used, fleet compatibility issues if any, etc. For example the Super Loop service was operated in-house because the Imperial Avenue division was closest to the service area, thus minimizing excessive deadhead and the buses used were brand new technology for MTS (gasoline-hybrid electric power plants) and SDTC was better capable of introducing, monitoring, maintaining, and operating this new technology.

Working within this restriction, MTS has driven down costs by consolidating much of its contracted fixed route and Rural operations under a single miles-based contract. In addition, reduction of contracted services that were unproductive such as the Scripps Ranch and Rancho Bernardo DART services, Rural service, and the Sorrento Valley Coaster Connection (also reported under DART in Form C) resulted in a reduced operating cost for the agency. These changes had little or no impact on ADA services.

MTS will continue to seek ways to improve efficiency by reviewing its service operations to determine the best method for service delivery. Operations will be evaluated to determine when opportunities are available for contracting within the confines of AB 117.
SANDAG Staff Member: Philip Trom
Date Completed: ________________

Operator: North County Transit District (NCTD)

Date of Last Performance Audit: April 15, 2010

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<th>Page</th>
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<th>Actions Taken to Implement Recommendations</th>
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<tbody>
<tr>
<td>32</td>
<td>1. Develop Strategies to improve farebox recovery on SPRINTER.</td>
<td>NCTD has taken three steps to improve SPRINTER farebox recovery:</td>
</tr>
</tbody>
</table>

(a) Improved fare enforcement resulting in higher farebox revenue. NCTD took the fare enforcement function in-house in June 2010, and increased the number of Code Enforcement Officers (CEOs) from 6 to 15. NCTD has since increased the number of CEOs from 15 to 17. This staff adjustment has allowed NCTD to expand fare enforcement coverage. Currently there is one CEO out on the line for the full service day, with periodic surges where multiple CEOs are deployed. Comparing January-March 2011 (in-house fare enforcement) with January-March 2010 (contracted fare enforcement), there were 294 SPRINTER fare citations in 2011 versus 226 in 2010, which represents a 30 percent increase. Also notable is that NCTD’s estimated fare evasion rate on COASTER and SPRINTER has dropped following implementation of the in-house Code Enforcement program.

(b) SPRINTER ridership has been increasing, which has led to increased fare revenue. In the first three quarters of FY2012 SPRINTER ridership was 1,804,868 compared to 1,620,425 for the first three quarters of FY 2011. This represents an 11.4 percent increase. This increase in ridership has translated to an increase in SPRINTER fare revenues of more than 17% over the same period.

(c) Reduced operating costs. NCTD re-negotiated its contract with SPRINTER contractor Veolia in 2010 to lower the cost of contracted service by $2,002,840 over the three-year contract. NCTD has managed SPRINTER costs through use of contracts, and
controlled cost increases to reasonable annual contract escalations.

(d) In January, 2011, NCTD increased SPRINT service on weekends which has contributed to additional ridership and fare revenue, while only increasing operating costs incrementally. The extended SPRINT schedule allows riders to utilize the SPRINT until 12:30am on weekends.

33 2. Consider updating the COASTER passenger counting methodology.

NCTD’s Information Technology Department has a FY 2012 Capital Improvement Project for installation of automatic passenger counters (APCs) on COASTER passenger cars. The proposal is to utilize one of NCTD’s current APC vendors for this installation. By installing APCs on the COASTER, NCTD will be able to collect more station level boarding and alighting data than is currently possible through manual surveys by SANDAG or by TASI (COASTER service contractor).

NCTD issued an RFP to procure APC’s in December 2011. Proposals were received from 2 vendors. Staff has sent additional questions to the vendors and has requested Best and Final Offers. Staff currently expects to take a recommendation for contract award to the NCTD Board of Directors in May 2012.

33 3. Continue efforts to implement prior audit recommendations, in particular undertaking business planning activities to guide service delivery strategies in the post-SPRINTER service environment.

In first quarter 2011, NCTD conducted extensive outreach to inform the public concerning the Mobility Plan service proposals, including:

- A comprehensive publication detailing all the service proposals available on vehicles, at information booths, and on-line
- Information sessions at transit centers
- Presentations at senior centers
- Presentations to City Councils in NCTD jurisdictions
- On-line survey available on the NCTD website, which generated over 1,000 responses

On April 19, 2011, NCTD conducted a Public Hearing regarding the proposed Mobility Plan service changes, at which nearly 40 persons commented. Based on results of the public survey and public hearing, NCTD modified a number of the original Mobility plan proposals. The
revised Mobility Plan was approved by NCTD Board at its May 19, 2011, Board meeting.

To date, Mobility Plan implementation has been as follows:

- On June 20, 2011, NCTD implemented weekend daytime frequency improvements to Route 303.

- On August 28, 2011, NCTD implemented the first major phase of the Mobility Plan, which included implementation of 3 new fixed routes, alignment and other service adjustments to another 10 routes, cancellation of 4 fixed routes, and introduction of new FLEX general-public, demand-response services in Southwest Carlsbad and the Escondido to Ramona (State Route 78) corridor.

- On March 11, 2012, NCTD implemented the second phase of Mobility Plan service changes, which included implementation of 3 new fixed routes, frequency improvements to 3 routes, alignment and other service adjustments to another 4 routes, and cancellation of 2 fixed routes.

- In June 2012, NCTD plans to implement the Encinitas-Solana Beach FLEX demand-response service.

- Going forward after June 2012, NCTD staff will continue to make adjustments to refine the services implemented since August 2011. Because of growing ridership on Route 358/359, staff is recommending not to discontinue it and not replace it with the San Marcos/Escondido FLEX service. Remaining Mobility Plan elements include: adding Saturday service on Routes 304, 334, and 355/357; adding Sunday service on Route 355/357; improving weekday PM frequency on Route 306; and improving Saturday frequency on Route 309. Timeframe for implementation of these remaining elements will be determined according to budget availability.
MID-COAST CORRIDOR TRANSIT PROJECT STATUS UPDATE

Introduction

The Mid-Coast Corridor Transit (Mid-Coast) Project is a TransNet Early Action Project that extends the Metropolitan Transit System’s trolley system’s Blue Line from the Santa Fe Depot in downtown San Diego to University Towne Centre, through the University of California, San Diego (UCSD) campus. The project achieved a major milestone in September 2011 when the Federal Transit Administration (FTA) approved moving the Mid-Coast Project into the Preliminary Engineering phase of project development under the New Starts Program. Since that time, significant progress has been made on advancing the Draft Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (Draft SEIS/SEIR) coordination with the FTA, engineering to further refine the Locally Preferred Alternative and coordination with key project stakeholders. Other key activities also are moving forward, such as analysis of alternative project delivery methods. This report provides an update on the status of the project including San Diego Federal Delegation support, FTA Coordination, Environmental Review, Locally Preferred Alternative (LPA) Refinements, budget, and schedule.

Discussion

Federal Delegation Support

Members of San Diego Federal Delegation recently provided key backing for Mid-Coast with a letter to Ray LaHood, Secretary of Transportation, supporting New Starts Funding for the Project. The letter states the Delegation’s “strong support” for the project as well as outlining the need for the project and project benefits. A copy of the letter is included as Attachment 1.

FTA Coordination

SANDAG and MTS staffs continue to coordinate efforts with FTA on the development of the Mid-Coast Project. In February 2012 FTA conducted one of three nationwide public outreach sessions on the Notice of Proposed Rulemaking (NPRM) for its discretionary Major Capital Investment programs (“New Starts” and “Small Starts”). The informational outreach hearing was held at the San Diego County Administration Building in San Diego on February 16, 2012. MTS, SANDAG, and FTA worked collectively to organize the public outreach session. Several members of the Mid-Coast Corridor Project Working Group were in attendance, which demonstrated strong local support for the project. In addition, members of both the SANDAG Board of Directors and MTS Board were present to welcome the FTA delegation headed by FTA Deputy Administrator Therese McMillan. SANDAG and MTS Board members who were in attendance to welcome the FTA included Supervisor Ron Roberts, SANDAG Board of Directors Second Vice Chair Jim Janney and MTS Board Chairman Harry Mathis.
On April 18, staff from FTA Headquarters in Washington, DC and FTA Region 9 was in San Diego for a tour of the Mid-Coast Project and the San Diego Trolley Green Line. California Public Utilities Commission (CPUC) staff additionally attended the tour. The tour provided SANDAG and MTS the opportunity to show the project reviewers from FTA Washington the significance of the corridor and the region’s success on very similar projects.

On April 19, the field tour was followed by an FTA Mid-Coast Project Quarterly Review Meeting with FTA staff from Headquarters in Washington, DC and Region 9 attending as well as CPUC staff. During the meeting SANDAG and MTS updated the FTA on the current project status and discussed preparation of environmental and engineering documents of concern to the FTA.

Environmental Review

SANDAG and FTA are preparing a Draft Supplemental Environmental Impact Statement/Subsequent Environmental Impact Report (Draft SEIS/SEIR) for the Mid-Coast Corridor Transit Project. SANDAG serves as the lead agency for the California Environmental Quality Act and FTA serves as the lead agency for the National Environmental Policy Act.

The technical reports which support the draft environmental document are nearing completion as are the initial Draft SEIS/SEIR chapters. Staff continues to coordinate with FTA and its Project Management Oversight Contractor in the development of the Draft SEIS/SEIR through such activities as early FTA review of the outline for the Draft SEIS/SEIR, and review of selected technical reports and Draft SEIS/SEIR chapters. This early involvement by FTA is expected to streamline review of the Draft SEIS/SEIR and speed release of the Draft SEIS/SEIR for public review in late 2012.

Locally Preferred Alternative (LPA) Refinements

Optional Trolley Station: Veterans Administration Medical Center
We continue to make minor design changes in the LPA alignment to accommodate the option of an at-grade station at the VA Medical Center on the east side of the Center along the Interstate 5 right-of-way. The proposed station site is being designed to minimize impacts to the VA property while not precluding future expansion of Interstate 5 in the vicinity. The station elevation would match the level of the adjacent parking lot. The station would include a retaining wall system, drop-off locations, and walkways linking access between the station and the main south entrance to the VA Medical Center. These improvements are being coordinated with the VA for future development by the Center. This station also provides access to nearby UCSD facilities including medical school buildings.

LPA Alignment and Design Option
Preliminary design is advancing for the portion of the LPA alignment on Genesee Avenue. The guideway in this section is on aerial structure. One option in this section has the columns for the structure located in the center of the street, within an existing median. Some street widening is needed to align lanes to provide sight distance around a curve and for left-turn pockets. Another design option that maintains the existing lane configurations and minimizes street widening on Genesee Avenue uses columns and beams called straddle bents. In order to maintain the existing street configuration the straddle bents would span Genesee to support the aerial structure localizing most of the needs to the column locations. These options will be considered in the Draft SEIS/SEIR in order to evaluate impacts and costs.
In addition to these design options, the feasibility of removing a traffic lane in each direction on Genesee Avenue to accommodate center columns for an aerial guideway (from a six-lane roadway to a four-lane roadway) was evaluated. Based on the initial results of the traffic impact analysis, Genesee and the vicinity would experience major traffic congestion and therefore, this is not considered a viable option.

**Project Budget**

In November 2011, as part of the approval of the SANDAG Plan of Finance, the project budget was updated to $1.704 billion excluding finance costs. Work continues on the project capital cost estimate and financial plan updates. No budget change is anticipated at this time. The budget and financial information will be included in the Draft SEIS/SEIR. The updated capital cost estimate will include a baseline cost estimate for the LPA and assessment of the optional station and design option along Genesee Avenue.

**Project Schedule**

With the federal approval to enter PE, the following delivery schedule has been updated in coordination with the FTA maintaining a revenue operations date of 2018. This schedule is based on a design-bid-build delivery method.

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<td>2015</td>
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Staff is evaluating construction delivery methods to determine a preferred method of project delivery. The current schedule and Draft SEIS/SEIR assumes traditional Design Bid Build contracting; however, several other construction contracting alternatives are being considered that may improve on delivery time, quality, or both. The delivery strategies under review include Construction Manager General Contractor (CMGC) and Design-Build (DB). CMGC and DB are both best value selection contracts that would allow SANDAG to consider the experience of the individuals and firms and their construction methods to advance the project, as well as price in selecting a contractor. Both methods have been used successfully by local agencies and may be applicable to Mid Coast. CMGC would require passage of legislation currently being pursued at the state level.

**Independent Taxpayer Oversight Committee (ITOC)**

Staff is scheduled to provide a status update on the Mid-Coast Corridor Transit Project to ITOC on June 13. A summary of ITOC comments, if any, will be provided at the next Mid-Coast Corridor Transit Project status update.
Next Steps

Development of the Draft SEIS/SEIR for the project will continue and is anticipated to be available for public review in late 2012.

Preliminary engineering will continue as will development of delivery strategies and third party review and coordination.

SANDAG staff will continue to work closely with MTS, UCSD, the City of San Diego, Caltrans, and other stakeholders in addition to the FTA and its Project Management Oversight Contractor in development of the Mid-Coast Project.

JIM LINTHICUM
Director of Mobility Management and Project Implementation

            2. Mid-Coast Corridor LPA Map

Key Staff Contacts:  Leslie Blanda, (619) 699-6907, Leslie.Blanda@sandag.org
                    Greg Gastelum, (619) 699-7378, Greg.Gastelum@sandag.org
April 18, 2012

The Honorable Ray LaHood
Secretary Of Transportation
U.S. Department of Transportation
1200 New Jersey Ave, SE
Washington, DC 20590

Dear Secretary LaHood:

Subject: Regional Support for Funding the Mid-Coast Corridor Transit Project in the Federal Transit Administration New Starts Program

On behalf of the San Diego federal delegation, we are writing in strong support of the San Diego region’s Mid-Coast Corridor Transit Project. As you may know, the San Diego Association of Governments (SANDAG), in partnership with the Metropolitan Transit System, received Federal Transit Administration (FTA) approval to initiate the Preliminary Engineering phase of the Mid-Coast Corridor Transit Project under the FTA New Starts Program. We respectfully ask that you continue to work with our region to support this project as it advances through the New Starts process. Working in partnership with the FTA, utilizing current advanced delivery project methods, our goal is to reduce a year off the project schedule so that we can begin construction while the region is still experiencing a low bid environment, and to create jobs and assist in the economic recovery.

The Mid-Coast Corridor Transit Project will improve public transit services between University City, downtown San Diego, and the international border, while connecting corridor residents with other Trolley lines serving Mission Valley and East County communities to Santee. The project will improve travel options to employment, education, medical, and retail centers for residents, commuters, and visitors, and will provide the important next link in an already successful light rail network. An added benefit of this project will be to provide light rail access to the Veterans Affairs Medical Center, a facility that serves many military wounded returning from war. It is hoped that the new Trolley line will be ready for the opening of the Medical Center’s anticipated Spinal Cord Injury unit.

Population in the entire corridor is forecast to increase 20 percent and employment is forecast to increase 14 percent by the year 2030. Freeways and arterials in the Mid-Coast corridor are generally congested, and traffic congestion is projected to increase as the region grows. The Mid-Coast Transit Project will expand transportation capacity in the corridor to accommodate existing and future travel demand, particularly for peak period commute trips.
The FTA has given the Project a medium-high rating, which is the highest rating for a project of this size in the country. Furthermore, the Project has been identified as a high-priority project by SANDAG and is part of the TransNet Early Action Program. TransNet, the local sales tax ordinance, will provide a 50 percent match of local sales funding to leverage federal funding for the capital improvements. The TransNet program also will provide operating funds for the Mid-Coast Corridor Transit Project from opening day to the year 2048.

Again, thank you for your consideration, and please feel free to contact us should you have any additional questions. We appreciate this opportunity to work together with you on this regionally significant project.

Sincerely,

Dianne Feinstein
United States Senator

Barbara Boxer
United States Senator

Susan A. Davis
Member of Congress

Bob Filner
Member of Congress

Brian P. Bilbray
Member of Congress

Duncan Hunter
Member of Congress
San Elijo Lagoon (Cardiff to Craven) Double Track (SAN73) – This amendment proposes to add RSTP from CAL29B, resulting from new Proposition 1B CMIA funds having been approved by the CTC for the 76/I-15 project (CAL29B), as discussed above. Total programmed increases to $44,730,000 to $35,900,000.

Grouped Projects for Operating Assistance - FTA Section 5316 JARC program (SAN97) – As stated above, the San Diego region was awarded additional JARC funds for FFY 2012. This amendment proposes to increase amount programmed to $342,000.

San Diego Metropolitan Transit System

Senior Disabled Program (MTS33A) – This amendment proposes to increase TransNet - Americans with Disabilities Act (ADA) funding. Total project increases to $3,470,000.

JARC Operations (MTS43) – This amendment proposes to add approximately $180,000 of JARC funding which was awarded by Caltrans DMT. Total project increases to $8,580,000.

San Diego, City of

West Mission Bay Drive Bridge (SD70) – This amendment proposes to revise funding between fiscal years and reduce funding to reflect the updated March 2012 HBP listing. Total project decreases to $120,100,000.

San Marcos, City of

Via Vera Cruz Bridge and Street Improvements (SM32) – This amendment proposes to move construction funds to years which are beyond the current RTIP cycle based on the updated HBP listing provided by Caltrans in March 2012. Total amount programmed decreases to $2,039,000.

Various

State Route 11 (V11) – This is a joint project between Caltrans and SANDAG. Currently the planning and feasibility study portion of the project is being implemented by SANDAG while Caltrans is performing the environmental clearance work. This amendment proposes to revise project funding by programming an additional $14.5 million of federal Corridors and Borders Infrastructure Program (CBI) in FFY 2012 and reducing local funds by the same amount, in order for Caltrans to obligate these funds for the right-of-way phase this federal fiscal year. Total project remains at $722,901,000.

Fiscal Constraint Analysis

Federal regulations require the 2010 RTIP to be a revenue-constrained document with programmed projects based upon available or committed funding and/or reasonable estimates of future funding. Funding assumptions are generally based upon: (1) authorized or appropriated levels of federal and state funding from current legislation; (2) conservative projections of future federal and state funding based upon a continuation of current funding levels; (3) the most current revenue forecasts for the TransNet program; and (4) the planning and programming documents of the local transportation providers.
### San Diego Association of Governments

**MPO ID:** SAN58  
**RTIP #:** 10-18

#### Project Title:
Grouped Projects for Operating Assistance - FTA Section 5317 New Freedom Program

#### Project Description:
Projects are consistent with 40 CFR Part 93.126 Exempt Table 2 categories: operating assistance to transit operators - non profit agencies providing transit service to elderly and disabled residents.

#### Change Reason:
Reduce funding

#### Capacity Status:
NCI  
**Exempt Category:** Mass Transit - Transit operating assistance

#### Est Total Cost: $3,311

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**PROJECT LAST AMENDED 10-17**

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### San Diego Association of Governments

**MPO ID:** SAN73  
**RTIP #:** 10-18

#### Project Title:
San Elijo Lagoon (Cardiff to Craven) Double Track  
**SANDAG ID:** 1239806

#### Project Description:
From MP 240.4 to MP 240.7 - design double track for Coastal Rail Corridor from CP Cardiff to CP Craven across San Elijo Lagoon - does not add additional transit service

#### Change Reason:
Increase funding

#### Capacity Status:
NCI  
**Exempt Category:** Mass Transit - Track rehabilitation in existing right of way

#### Est Total Cost: $76,700

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* project completion outside of this RTIP cycle

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**TOTAL**               | $30,465| $27,350|       |       |       |       |       |     |     | $27,350|
|                         | $35,900|       |       |       |       |       |       |     |     | $30,754|

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**Wednesday, May 9, 2012**

**REVISED**

Attachment 1
SR 78 Corridor Study
May 18, 2012

Presentation Outline

- Study Objectives
- Study Area
- Alternatives Evaluated
- Public Outreach
- Implementation Strategy
- Next Steps
- Recommendation
Study Objectives

- Examine the feasibility of toll and other non-toll alternatives to address current and future travel demand
- Estimate revenues that could be collected through user fees on new toll lanes

SR 78 Corridor Study Area
Alternatives Evaluated

- Alternative 1
  - Managed Lanes
    - Carpools and transit access the lanes for free
    - Excess capacity would be sold to solo drivers
- Alternative 2
  - Toll lanes
    - All drivers pay for access (except transit vehicles)
- Both alternatives include auxiliary lane, transit, and connector improvements consistent with 2050 RTP
- Travel demand analyzed for 2020, 2035, and 2050

Public Outreach

- Community outreach meetings
  - March 14, 2012, San Marcos
  - March 15, 2012, Oceanside
- Other presentations:
  - Interagency Working Group on Tribal Transportation Issues
  - San Diego North Economic Development Corporation, Public Policy Committee
  - Vista Chamber of Commerce Government Affairs Committee
- Information about the study and an online comment tool: www.sandag.org/sr78study
Comments Received

- Received 48 comments through comment cards, letters, email, and online comment tool
- Comments:
  - Support for Managed Lanes on SR 78
  - Concerns regarding specific on/off ramps or freeway locations
  - Interest in additional general purpose lanes or no-build alternatives
  - Need for freeway connectors/HOV connectors at I-5/SR 78 and I-15/SR 78
  - Concerns about future construction and historic structures

Study Recommendation

- Advance the development of the Managed Lanes as defined in the 2050 RTP based on:
  - Performance
  - Feasibility
  - Public input
Project Delivery Methods

- Potential project delivery methods:
  - Design-bid-build
  - Design sequencing
  - Design-build
  - Construction management/general contracting

Project Phasing Options

- To be evaluated in future project development stages
  - Phasing by segment
    - I-15 to San Marcos Boulevard
    - San Marcos Boulevard to Melrose Drive
    - Melrose Drive to I-5
  - Phasing of improvement type
    - Build operational improvements before building new lanes
  - Hybrid approach
Next Steps

- Provide final report to Caltrans
- Draft FY 2013 Budget: SR 78 Project Study Report (PSR), SR 78/I-15 HOV Connector PSR/Project Development Support

Recommendation

The Transportation Committee is asked to accept the State Route 78 Corridor Study and its findings and to provide them to Caltrans for consideration in the project initiation document process.
What is TDM?

Strategies that change travel behavior (how, when, and where people travel) in order to improve transportation system efficiency and achieve key regional objectives, such as reduced traffic congestion, increased safety and mobility, energy conservation, and emission reductions.
Regional TDM Program

iCommute Programs and Services:

- Online ridematching
- Regional vanpool program
- Employer & community outreach
- Guaranteed Ride Home
- Bicycle program
- SchoolPool
- Transit resources & promotion
- Carpool Incentive Pilot Program

Study Framework

1. Planning for TDM
2. Implementing TDM through the development process
3. Managing and monitoring TDM
TDM in Local Plans

- General plans
- Specific plans
- Climate action plans
- Corridor plans
- Parking management plans
- Municipal TDM plans
- TDM plans for construction mitigation

Case Study: General Plan

- City of San Diego General Plan - Mobility Element:
  - Dedicated TDM section with eight broad TDM policies that address:
    - Marketing and promotion of TDM to employers and employees
    - Development and design standards that are conducive to alternative transportation
    - Provision of TDM programs and amenities such as car and bikesharing
Case Study: Specific Plan

- **Transit Village Area Plan, City of Boulder, CO:**
  - Describes the city’s vision for a 160-acre Transit Village. Includes a TDM program based on four core elements:
    - Parking control
    - Active promotion of transportation options
    - Sustainable program funding
    - Performance standards and monitoring
  - Goal of TDM program is 55% to 70% of all trips made by alternative mode

Implementing TDM through the Development Process

- **Urban Design**
  - Design guidelines
  - Complete streets

- **Site Development**
  - Trip reduction ordinances
  - Development agreements

- **Parking Management**
  - Parking maximums
  - Parking pricing
  - Shared parking
  - Demand-based parking

Maricopa Association of Governments Complete Streets, 2011 (photo credit Dan Burden)
Case Study: Design Guidelines

- Urban Street Design Guidelines – City of Charlotte, NC:
  - Street design shapes development patterns and provides access to viable transportation choices
  - Six-step planning and design process that matches each street to the existing and emerging land use context

Case Study: Trip Reduction Ordinance

- Parking and TDM (PTDM) Ordinance – Cambridge, MA:
  - PTDM plan required for commercial projects that propose parking
  - Requires an SOV mode-share commitment of 10% below the 1990 Census Journey to Work data for the project location
  - All projects must have an approved PTDM plan before they can obtain permits
Case Study: Parking Policy

- Downtown Parking Management Program
  - City of Ventura, CA:
    - Manages on- and off-street parking to achieve a 15% vacancy rate using pricing
      - 83% of merchants surveyed support the parking management program after implementation
    - Allows shared on-site parking between land uses
    - Funds collected are reinvested in downtown
      - Program offsets approximately $500,000 in personnel costs

Managing and Monitoring TDM

- Cities’ role in managing TDM
  - Funding and coordinating municipal TDM programs
- Monitoring the effectiveness of TDM programs
  - Performance indicators
  - Methods for evaluating the direct and indirect impacts of TDM programs
Case Study: Managing and Monitoring TDM

• City of Rockville, MD:
  – TDM program funded through developer fees collected from new developments
    • $0.10/square foot for commercial and $60/unit for multi-family residential for a ten-year period
  – Vehicle trip reduction rates used to measure TDM program success
    • Trip reduction goals based on land use category and level of transit service

Regional Resources

• Program Support
  – iCommute
  – 2050 RTP and the Sustainable Communities Strategy

• Parking Tools
  – Trip Generation for Smart Growth
  – Parking Strategies for Smart Growth

• Design Guidelines
  – Planning and Designing for Pedestrians – Model Guidelines for the San Diego Region
  – Smart Growth Design Guidelines
  – The Regional Bicycle Plan

• Funding Opportunities
  – Smart Growth Incentive Program
  – Active Transportation Grant Program
Next Steps

- Upon acceptance by the Transportation Committee, the study will be:
  - distributed to member agencies.
  - posted to the SANDAG Web site as a resource in the SANDAG Smart Growth Tool Box and a reference for the regional intergovernmental review process.

Recommendation

- The Transportation Committee is asked to accept *Integrating Transportation Demand Management into the Planning and Development Process – A Reference for Cities* as an additional resource in the Smart Growth Tool Box.
Mid-Coast Corridor Transit Project
Status Update

May 18, 2012

- TransNet Early Action Project
- Extends Trolley Blue Line from Santa Fe Depot to University City
- Serves major activity centers
  - Downtown San Diego
  - Old Town Transit Center
  - UCSD
  - UTC
Project Support

- San Diego Federal Delegation Support
- Letter to Ray LaHood
  - “Strong support” for Mid-Coast Project
  - Support for New Starts Funding
  - Outlines project benefits

FTA Coordination

- FTA outreach session for NPRM in San Diego – February 2012
  - SANDAG Board of Directors and MTS Board members welcome FTA Deputy Administrator Therese McMillan
  - Mid-Coast Corridor Project Working Group members attend
- FTA tour of Mid-Coast Project and MTS Green Line – April 18
- FTA quarterly review meeting – April 19
Environmental Review

- SANDAG and FTA preparing a Draft SEIS/SEIR for project
- Technical reports and initial Draft SEIS/SEIR chapters nearing completion
- FTA early review of technical reports
- Draft SEIS/SEIR for public review – December 2012

LPA Refinements

- Optional station at VA Medical Center
- Genesee Avenue
Optional Station: VA Medical Center

Genesee Avenue LPA Alignment
Project Budget and Schedule

Mid-Coast Project Budget $1.7 Billion

Schedule

- Draft environmental document Late 2012
- Final environmental document Late 2013
- FTA Record of Decision Early 2014
- FTA approval to enter final design Early 2014
- FTA Full Funding Grant Agreement Late 2014
- Begin construction 2015
- Revenue Operations 2018

Next Steps

- Complete Draft SEIS/SEIR
- Advance Preliminary Engineering
- Work with FTA and other stakeholders
Questions