REGIONAL PLANNING COMMITTEE

Friday, July 2, 2010
12 noon to 2 p.m.
SANDAG Board Room
401 B Street, 7th Floor
San Diego

AGENDA HIGHLIGHTS

- REGIONAL COMPREHENSIVE PLAN: 2009 ANNUAL PERFORMANCE MONITORING REPORT
- PRESENTATION ON THE PORT OF SAN DIEGO’S MARITIME INDUSTRY AND ROLE IN THE REGION
- OVERVIEW OF CLIMATE CHANGE ADAPTATION AND THE 2050 REGIONAL TRANSPORTATION PLAN
- 2050 REGIONAL TRANSPORTATION PLAN (RTP): PREFERRED UNCONSTRAINED TRANSPORTATION NETWORK

PLEASE TURN OFF CELL PHONES DURING THE MEETING

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MISSION STATEMENT
The Regional Planning Committee provides oversight for the preparation and implementation of the Regional Comprehensive Plan that is based on the local general plans and regional plans and addresses interregional issues with surrounding counties and Mexico. The components of the plan include: transportation, housing, environment (shoreline, air quality, water quality, habitat), economy, borders, regional infrastructure needs and financing, and land use and design.

San Diego Association of Governments  ·  401 B Street, Suite 800, San Diego, CA 92101-4231
(619) 699-1900  ·  Fax (619) 699-1905  ·  www.sandag.org
Welcome to SANDAG. Members of the public may speak to the Regional Planning Committee on any item at the time the Committee is considering the item. Please complete a Speaker’s Slip, which is located in the rear of the room, and then present the slip to Committee staff. Also, members of the public are invited to address the Committee on any issue under the agenda item entitled Public Comments/Communications/Member Comments. Speakers are limited to three minutes. The Regional Planning Committee may take action on any item appearing on the agenda.

This agenda and related staff reports can be accessed at www.sandag.org under meetings on the SANDAG Web site. Public comments regarding the agenda can be forwarded to SANDAG via the e-mail comment form also available on the Web site. E-mail comments should be received no later than noon, two working days prior to the Regional Planning Committee meeting. Any handouts, presentations, or other materials from the public intended for distribution at the Regional Planning Committee meeting should be received by the Clerk of the Board no later than 12 noon, two working days prior to the meeting.

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## REGIONAL PLANNING COMMITTEE

**Friday, July 2, 2010**

<table>
<thead>
<tr>
<th>ITEM #</th>
<th>RECOMMENDATION</th>
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<tbody>
<tr>
<td>+1.</td>
<td>APPROVAL OF JUNE 4, 2010, MEETING MINUTES</td>
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<td>2.</td>
<td>PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS</td>
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Members of the public will have the opportunity to address the Regional Planning Committee on any issue within the jurisdiction of the Committee that is not on this agenda. Speakers are limited to three minutes each and shall reserve time by completing a “Request to Speak” form and giving it to the Clerk prior to speaking. Committee members also may provide information and announcements under this agenda item.

## CONSENT

+3. REGIONAL COMPREHENSIVE PLAN: 2009 ANNUAL PERFORMANCE MONITORING REPORT (Christine Eary)  

A draft of the 2009 RCP Monitoring Report was released for public comment in June 2010. Comments have been incorporated into the attached revised draft. The Regional Planning Committee is asked to recommend that the SANDAG Board of Directors accept the “Regional Comprehensive Plan: 2009 Annual Performance Monitoring Report” in substantially the same form as attached, and further recommends that the Board of Directors approve the revised schedule for biennial reporting in future years.

## REPORTS (4 through 6)

4. PRESENTATION ON THE PORT OF SAN DIEGO’S MARITIME INDUSTRY AND ROLE IN THE REGION (Port Commissioner Lou Smith and John Helmer, Director of Planning, San Diego Unified Port District)  

The Port will provide an overview of its current operations and initiatives including capital improvement projects such as the North Embarcadero Visionary Plan, the Broadway Cruise Ship Terminal, San Diego Convention Center Expansion, and the Chula Vista Bayfront Masterplan. The presentation will also emphasize the regional and global role of the Port.

5. OVERVIEW OF CLIMATE CHANGE ADAPTATION AND THE 2050 REGIONAL TRANSPORTATION PLAN (Ron Saenz)  

An overview of climate change adaptation strategies and their potential role in the 2050 RTP will be provided. This discussion includes efforts being made by federal, state, and local governments.
6.  **2050 REGIONAL TRANSPORTATION PLAN (RTP): PREFERRED UNCONSTRAINED TRANSPORTATION NETWORK** (Heather Werdick and Carolina Gregor)

Defining the Unconstrained Transportation Network is an important step in developing an RTP because it establishes the broadest network from which funding scenarios will be identified. Once the Unconstrained Network is identified, staff will prioritize all of the future projects, using the updated transportation project evaluation criteria approved by the SANDAG Board of Directors. Based on input from SANDAG working groups and the public, Policy Advisory Committees, and the Board of Directors, staff has been working on developing a preferred Unconstrained Transportation Network, which will be presented in more detail at the meeting. RPC members are asked to discuss and provide feedback on the Unconstrained Network. The SANDAG Board of Directors will be asked to accept the Unconstrained Transportation Network at its July 23, 2010, meeting. Attached as background information are two reports that were presented to the SANDAG Board of Directors in June.

7. **UPCOMING MEETINGS**

The next meeting of the Regional Planning Committee is scheduled for August 6, 2010, at 12 noon.

8. **ADJOURNMENT**
TRANSPORTATION COMMITTEE AND REGIONAL PLANNING COMMITTEE
ACTIONS JOINT MEETING OF JUNE 4, 2010

The joint meeting of the Transportation Committee and the Regional Planning Committee was called to order by Chair Jim Janney (South County) and Chair Jack Dale (East County) at 9:47 a.m.

A. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Bill Figge, Caltrans District 11, reported that Cindy McKim has been appointed as the director for Caltrans.

B. RECENT AWARDS (INFORMATION)

Chair Janney announced that SANDAG has received two planning awards recently. The first is from the San Diego/Tijuana Chapter of the Urban Land Institute (ULI) awarding SANDAG’s Regional Comprehensive Plan (RCP) and Smart Growth Concept Map with a “Smart Growth of the Decade Award.” The second is from the San Diego Chapter of the American Planning Association (APA) for SANDAG’s Smart Growth Design Guidelines.

Action: This item was presented for information.

C. URBAN AREA TRANSIT STRATEGY: MODE SHARE GOALS; PERFORMANCE OF ALTERNATIVE NETWORKS; INITIAL RECOMMENDATIONS FOR A REVISED TRANSIT NETWORK; AND DISCUSSION OF COMPLEMENTARY HIGHWAY NETWORK CONCEPTS FOR THE 2050 REGIONAL TRANSPORTATION PLAN (DISCUSSION)

During April and May, staff presented the Urban Area Transit Strategy alternative transit networks to the Transportation Committee, various SANDAG working groups, and at the 2050 Regional Transportation Plan (RTP) public workshops for public input. The networks also were reviewed by an outside Peer Review Panel. The attached staff report summarized the comments received to-date on the three alternative networks, presented draft transit mode share goals for key corridors/communities, discussed initial performance data for the alternative networks, and proposed initial recommendations for a revised transit network and complementary highway network concepts. Initial thoughts on a draft 2050 RTP Unconstrained Transportation Network will be made to the Board of Directors at its June 11, 2010, Policy Meeting.

Carolina Gregor, Senior Regional Planner, introduced the item.

Dave Schumacher, Principal Regional Planner, presented an in-depth detailed presentation on the three alternative transit networks.
Heather Werdick, Senior Regional Planner, presented information on the complementary highway network concepts.

Duncan McFetridge, Save Our Forests and Ranchlands (SOFAR), submitted written documents and spoke regarding SOFAR's concerns and suggestions about the Urban Area Transit Strategy and alternative networks.

Ben Nicholls, Executive Director Hillcrest Business Association, spoke in favor of this item.

**Action:** This item was presented for discussion.

D. **SMART GROWTH TRIP GENERATION STUDY (RECOMMEND)**

A draft of the smart growth trip generation study and parking literature review was presented to the Regional Planning and Transportation Committees in March for recommendation to the Board of Directors for acceptance. The Transportation Committee recommended that the Board of Directors accept the study, and the Regional Planning Committee requested clarification regarding the use of the study.

Christine Eary, Associate Regional Planner, presented further details as requested.

**Action:** Upon a motion by Supervisor Ron Roberts (County of San Diego) and a second by Councilmember Lesa Heebner (North County Coastal), the Transportation and Regional Planning Committees recommended that the Board of Directors accept the study for inclusion in the San Diego Traffic Generators Manual as an appendix and as a resource for local jurisdictions. The motion passed with Councilmember Sherri Lightner (City of San Diego) opposing.

E. **COMMUNITIES PUTTING PREVENTION TO WORK GRANT (INFORMATION)**

The County of San Diego has received a federal economic stimulus grant from the Centers for Disease Control and Prevention to support policy development and programs leading to built environment changes that support active lifestyles and healthy nutrition. SANDAG is among the partners helping to implement this grant with a focus on active transportation, safe routes to schools, and regional policy development.

Chairwoman Pam Slater-Price (County of San Diego) introduced the item.

Supervisor Roberts discussed his role in implementing the grant.

Stephan Vance, Senior Regional Planner, presented the item.

Tracy Delaney, County of San Diego, spoke regarding the County's appreciation for the grant.

**Action:** This item was presented for information.
REGIONAL PLANNING COMMITTEE ACTIONS
MEETING OF JUNE 4, 2010

The meeting of the Regional Planning Committee was called to order by Chair Janney at 11:52 a.m. See the attached attendance sheet for Regional Committee member attendance.

1. APPROVAL OF MEETING MINUTES (APPROVE)

Action: Upon a motion by Chairwoman Slater-Price and a second by Councilmember Heebner, the Regional Planning Committee approved the minutes from the April 2, 2010, meeting. Councilmember Lightner recused herself from the vote.

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

There were no public or member comments.

CONSENT ITEM (3)

3. PROPOSAL TO AMEND SHORELINE PRESERVATION WORKING GROUP CHARTER (APPROVE)

The RPC is asked to approve an amendment to the charter of the Shoreline Preservation Working Group to add the Coastal Environmental Rights Foundation as an advisory member of the Working Group.

This item was pulled off consent for discussion and Rob Rundle, Principal Regional Planner, presented the item.

Action: Upon a motion by Chairwoman Slater-Price and a second by Councilmember Heebner, the Regional Planning Committee approved an amendment to the charter of the Shoreline Preservation Working Group to add the Coastal Environmental Rights Foundation as an advisory member of the Working Group.

REPORTS ITEMS (4 THROUGH 5)

4. REGIONAL COMPREHENSIVE PLAN: 2009 ANNUAL PERFORMANCE MONITORING REPORT (ACCEPT)

Monitoring progress in implementing the RCP will occur on an annual basis. In 2006, SANDAG released the first monitoring report entitled "The Regional Comprehensive Plan: Establishing a Baseline for Performance Monitoring (Baseline Report)." The 2009 Annual Performance Monitoring Report represents the third RCP monitoring report since the Baseline Report was accepted by the SANDAG Board of Directors in October 2006.

Ms. Eary presented the item.

Chair Janney directed staff to pursue necessary action to amend the requirement for an annual monitoring progress report to a biennial report.
Action: Upon a motion by Chairwoman Slater-Price and a second by Councilmember Steve Gronke (North County Inland), the Regional Planning Committee accepted the 2009 report for a 30-day public review and comment period.

5. TransNet ENVIRONMENTAL MITIGATION PROGRAM: FISCAL YEAR 2010 LAND MANAGEMENT GRANTS (RECOMMEND)

On September 25, 2009, the SANDAG Board of Directors approved a process and criteria for funding land management projects under the TransNet Environmental Mitigation Program. Of the 24 applications received, 10 have been recommended to the RPC for funding.

Mayor Pro Tem Downey introduced the item.

Keith Greer, Senior Regional Planner, presented the item.

Action: Upon a motion by Chairwoman Slater-Price and a second by Councilmember Heebner, the Regional Planning Committee reviewed the list of grants, and recommended to the SANDAG Board of Directors a list of grants for funding and authorization for the Executive Director to enter into grant agreements.

6. UPCOMING MEETINGS

The next meeting of the Regional Planning Committee is scheduled for July 2, 2010, at 12 noon.

7. ADJOURNMENT

Chair Janney adjourned the meeting at 12:18 p.m.

Attachment: Attendance Sheet
## CONFIRMED ATTENDANCE
### SANDAG REGIONAL PLANNING COMMITTEE MEETING
**JUNE 5, 2009 — 12:00 p.m. to 2:00 p.m.**

<table>
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<tr>
<th>SUBREGIONAL AREA</th>
<th>JURISDICTION</th>
<th>NAME</th>
<th>MEMBER / ALTERNATE</th>
<th>ATTENDING</th>
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<td>City of Vista</td>
<td>Steve Gronke</td>
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<td>City of Poway</td>
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<td>South County</td>
<td>City of Imperial Beach</td>
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<td>Lesa Heebner</td>
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<td>Teresa Barth</td>
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<td>City of Lemon Grove</td>
<td>Jerry Jones, Vice Chair</td>
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<td>Jerry Selby</td>
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<td>Jerry Sanders</td>
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<td>Sherri Lightner</td>
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<td>Pam Slater-Price</td>
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<td>Laurie Berman</td>
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<td>San Diego County Water Authority</td>
<td>Elsa Saxod</td>
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<td>Department of Defense</td>
<td>Steve Chung</td>
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<td>Lou Smith</td>
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<td>Carl Hilliard</td>
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<td>Regional Planning Technical Working Group (TWG)</td>
<td>Bill Anderson</td>
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<td>Bill Chopyk</td>
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<td>Southern California Tribal Chairmen’s Association</td>
<td>Johnny Hernandez (Iipay Nation of Santa Ysabel)</td>
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<td>Allen Lawson (San Pasqual)</td>
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<td>Denis Turner (SCTCA)</td>
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<td>Environmental Mitigation Program Advisory Member</td>
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<td>California Department of Fish and Game</td>
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<td>Susan Wynn</td>
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Introduction

Recommendation
The Regional Planning Committee is asked to recommend that the SANDAG Board of Directors accept the “Regional Comprehensive Plan: 2009 Annual Performance Monitoring Report” in substantially the same form as attached, and further recommends that the Board of Directors approve the revised schedule for biennial reporting in future years.

Discussion
Staff presented the 2009 Monitoring Report to the RPC on June 4, 2010. Staff received one comment when the report was presented to the Regional Planning Technical Working Group (TWG) on June 10. The comment and response are listed below.

Housing Section

- The report does not discuss potential solutions to the continued housing affordability problem in the region. It would be useful for the TWG to discuss potential solutions at future meetings.

Response: The report is intended to provide data in the interest of monitoring performance and does not attempt to pose potential solutions. However, the TWG agreed that future meetings would be an appropriate venue for such discussion. The TWG will be convening a number of joint meetings with the Regional Housing Working Group in the near future, and will discuss potential solutions as part of the process of developing the Regional Housing Needs Assessment.

Any additional public comments SANDAG receives before the end of the 30-day public review period will be incorporated into the Report.
Revised Reporting Schedule

Additionally, at its June meeting, the RPC requested that the annual report schedule be revised to a biennial schedule.

Next Steps

The 2009 Monitoring Report will be presented to the Board of Directors for acceptance in July. If the RPC so recommends, the Board of Directors will also be asked to approve a biennial reporting schedule for the Monitoring Report. Upon acceptance by the Board of Directors, the Regional Comprehensive Plan Performance Monitoring Report will then be produced on a biennial basis, beginning with the 2011 report (to be presented in June 2012).

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


The full report in electronic format can be downloaded at www.sandag.org/rcpmonitoring, or is available by contacting the SANDAG Public Information Office at (619) 699-1950

Key Staff Contact: Christine Eary, (619) 699-6928, cea@sandag.org
Executive Summary

The Regional Comprehensive Plan (RCP), adopted by the SANDAG Board of Directors in 2004, is the long-term planning framework for the San Diego region. It defines a vision and lays out goals, key issues, and needed actions in areas ranging from urban form and transportation to public facilities and borders. It summarizes where the region was in 2004, where the region wants to be by 2030, and what the region needs to do to get there. The RCP also calls for ongoing monitoring to track progress toward meeting the goals outlined in the Plan.

In 2006, SANDAG released the Regional Comprehensive Plan: Establishing a Baseline for Monitoring Performance (Baseline Report), to be used to benchmark progress on an annual basis. The 2009 RCP Annual Performance Monitoring Report (2009 Monitoring Report) is the third since the Baseline Report was accepted by the Board in October 2006.

The 2009 Monitoring Report includes the most recent data available for each indicator, typically from 2009. For some indicators, there is a one year delay or longer in reporting; in these cases, data from the most recent year available are included. For all indicators, the most recent data are provided and related to the Baseline Report.

Based on the data collected for the 2009 Monitoring Report, the indicators illustrate those areas in which the region appears to be moving in the right direction and those in which improvement is needed.

Moving in the Right Direction

- The share of new housing units built in Smart Growth Opportunity Areas (SGOAs) continued to increase; the SGOAs also experienced job growth despite job losses in the region as a whole.
- Transit ridership continued to increase.
- Travel times have decreased.
- The regional crime rate continued to decrease.
- The number of beach mile closure days has decreased.
- Water consumption decreased over the last two years.

Areas for Improvement

- Housing production in the very low, low, and moderate income categories did not keep pace with above-moderate housing production: 145 percent of the above-moderate income housing goal identified in the RHNA has been met, while 16 percent of the very low-, 22 percent of the low-, and 17 percent of the moderate-income housing goal has been met. Overall, 71 percent of the RHNA housing production goal has been met during the housing element cycle.
- Regionwide, the share of commuters who drive alone has not decreased.
- Unemployment has been increasing in the last three years and has now hit double digits. San Diego’s unemployment rate is higher than that of the United States as a whole.

Throughout the 2009 Monitoring Report, indicator data are in certain cases related to growth in population, housing, or jobs, as shown in Table 1. Between 2008 and 2009, the region grew by 41,855 people, and added 5,199 housing units. In the same time period, the region lost 70,000 jobs.
Table 1
Population, Housing Units, and Job Growth in the San Diego Region, 2004 to 2009

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2008</th>
<th>2009</th>
<th>Percent Change</th>
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<td>2000-2008 0%</td>
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<td>Population</td>
<td>2,813,833</td>
<td>3,131,552</td>
<td>3,173,407</td>
<td>11%</td>
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<td>Housing Units</td>
<td>1,040,149</td>
<td>1,140,349</td>
<td>1,145,548</td>
<td>10%</td>
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<td>Jobs</td>
<td>1,205,200</td>
<td>1,309,300</td>
<td>1,239,300</td>
<td>9%</td>
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Sources: SANDAG Annual Population and Housing Estimates; California Department of Finance; California Employment Development Department; Bureau of Labor Statistics

Many of the indicators included in this report use the American Community Survey as their data source. ACS is the United States (U.S.) Census Bureau’s new program for collecting and disseminating demographic, socio-economic, and housing data on an annual basis. Approximately one out of 40 addresses (2.5% of the population) is surveyed each year, which equals about three million addresses a year. In San Diego County, one out of 40 equates to roughly 28,800 addresses each year.

Please note that ACS is not designed to count the population, but rather to collect person and household characteristic information. The official Census (short form), which counts the entire population, still will be held every ten years.

Annual indicators were selected as part of the RCP, based upon key policy areas and data availability. The list of indicators is revised periodically as new plans are adopted, to reflect indicators included in those plans. The Regional Energy Strategy was adopted in 2009, and the energy indicators in the RCP Monitoring report now match those of the Regional Energy Strategy. Miles of deficient roads on Congestion Management Program network is being eliminated, as the SANDAG Board of Directors opted out of the Congestion Management Program. SANDAG is no longer required to report on this indicator, and this information will be captured in the future through data provided through the travel times and volumes indicator, once data is available from the A-PeMS system. Additionally, there are two indicators for which data has not been available since the Baseline Report. Although attempts have been made over the years to identify data sources, those indicators are now being dropped from the list due to lack of data. Those indicators include Lagoon health and Participation in the Pedestrian Commuter Program and Free and Secure Trade (FAST) program. It should be noted that lagoon water quality is already captured in the Impaired waterbodies indicator.
### Annual Indicators for Monitoring the Regional Comprehensive Plan

<table>
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<th>URBAN FORM AND TRANSPORTATION</th>
<th>1. Share of new housing units and jobs located in Smart Growth Opportunity Areas</th>
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<tr>
<td></td>
<td>2. Share of new housing units within County Water Authority water service boundary</td>
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<td>3. Annual transit ridership</td>
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<td>4. Commute mode shares</td>
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<td>5. Travel times and volumes for key transportation corridors</td>
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<tr>
<td></td>
<td>Miles of deficient roads on Congestion Management Program network</td>
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<td>6. Annual hours of traffic delay per traveler</td>
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<td>7. Regional crime rate</td>
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<tr>
<td>HOUSING</td>
<td>8. Housing Opportunity Index</td>
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<tr>
<td></td>
<td>9. Percent of households with housing costs greater than 35 percent of income</td>
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<tr>
<td></td>
<td>10. Ratio of new jobs to new housing units</td>
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<td>11. Share of new and existing housing units by structure type and income category</td>
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OVERVIEW OF CLIMATE CHANGE ADAPTATION AND THE
2050 REGIONAL TRANSPORTATION PLAN
File Number 3100500

Introduction

The draft White Paper, Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan (RTP) (Attachment 1), provides an overview of potential impacts to transportation infrastructure due to climate change and the potential role of adaptation strategies in the 2050 RTP. Issues and policy implications are identified as well as recommendations on next steps.

Discussion

This draft White Paper was developed primarily to assess the California Transportation Commission 2010 Regional Transportation Plan (RTP) Guidelines regarding best practices for addressing climate adaptation, to identify strategies included in the 2009 California Climate Adaptation Strategy related to transportation infrastructure, and to evaluate adaptation efforts by transportation agencies across the country.

Input on this draft White Paper is being sought from SANDAG committees and stakeholders.

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

Attachment: 1. Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan – Draft White Paper

Key Staff Contact: Ron Saenz, (619) 699-1922, rsa@sandag.org
OVERVIEW OF CLIMATE CHANGE ADAPTATION AND THE 2050 REGIONAL TRANSPORTATION PLAN - WHITE PAPER

INTRODUCTION

Adaptation is defined by the California Natural Resources Agency as: Efforts that respond to the impacts of climate change - adjustments in natural or human systems to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities.\(^1\)

Mitigation is defined as actions to reduce greenhouse gas emissions. Mitigation alone will not prevent climate change from having serious impacts on the San Diego region. The current concentration of greenhouse gases in our atmosphere - without considering continued and accelerated pace of emissions – will continue to change the climate for the next 30 to 40 years.\(^2\)

Adaptation to the changes that have already been set in motion is essential to maintain the region’s economy, ecosystems, and public health.

The following discussion is an overview of potential impacts to transportation infrastructure due to climate change and the proposed climate change adaptation strategies to deal with these impacts for consideration in the 2050 Regional Transportation Plan (RTP). This discussion includes efforts being made by federal, state, and local governments. While some strategies may not ultimately prove viable for the San Diego region, they are presented in this White Paper to provide decision-makers with a broad range of options for consideration. Also included are draft recommendations focused on the San Diego region that if implemented would require a more detailed study and analysis prior to implementation.

Objectives for the 2050 RTP

The objectives of this white paper for the 2050 RTP are threefold. They include:

1. Assessing the 2010 California RTP Guidelines regarding best practices for addressing climate adaptation in RTPs.
2. Identifying strategies included in the 2009 California Climate Adaptation Strategy related to transportation infrastructure.
3. Evaluating adaptation efforts by transportation agencies across the country.

Background

Climate change is happening now and its impacts are readily apparent, with temperatures increasing, Arctic sea ice disappearing, and sea levels rising beyond climate scientists’ worst-case estimates. Recently it was reported that January 2000 to December 2009 was the warmest decade

\(^1\) 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p.4
\(^2\) 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p.14
Recent atmospheric measurements of carbon dioxide and methane (two important greenhouse gases) exceed the natural range over the last 650,000 years. The predicted rate of temperature change by 2050 as a result of these greenhouse gas levels is 10-50 times faster than the temperature changes that occurred when the ice ages receded.

Most significantly, the results of greenhouse gases produced by the fossil fuel energy we burn to power our society are a major contributor to climate change. We are largely dependent on fossil fuels to generate electricity, drive our vehicles, transport goods, heat and cool our homes, produce and deliver food, convey and treat water, and provide power to our businesses and industries.

The most significant climate impacts to California’s transportation infrastructure are predicted to be from higher temperatures and extreme weather events across the state, reduced and shifting precipitation patterns throughout California, and sea-level rise. The largest projected damages will come from sea-level rise threatening large portions of California’s coastal transportation, housing, and energy-related infrastructure. The San Diego region is not immune to these threats.

Temperature extremes will impact the transportation sector. It is expected less extreme cold days will reduce road damage related to frost and other cold weather conditions, but extreme hot days (including prolonged periods of very hot days), are likely to become more frequent, increasing the risk of buckling of highways and railroad tracks and premature deterioration or failure of transportation.

Based on scenarios that do not assume explicit climate policies to reduce greenhouse gas emissions, global average temperature is projected to rise by 2 to 11.5°F by the end of this century (relative to the 1980-1999 time period). By 2050, the San Diego region is expected to experience a rise in average annual temperatures between 1.5 and 4.5 degrees Fahrenheit. Greater increases will occur in summer, with peak temperatures consistently reaching the upper 80s and low 90s. Larger temperature increases are expected in inland areas as compared to the coastal zone (within 50 km). Though precipitation is expected to maintain the existing Mediterranean pattern with dry summers and most rainfall happening in the winter months, rainfall amounts will likely vary widely from year to year, leaving the region highly vulnerable to drought.

The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour, is likely to cause more mud- and

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3 National Aeronautics and Space Administration. 2010. NASA Research Finds Last Decade was Warmest on Record, 2009 One of Warmest Years. Available at: www.nasa.gov/home/hqnews/2010/jan/HQ_10-017_Warmest_temps.html.
6 SANDAG 2010 Climate Action Strategy – Final, p. 1
7 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p.124
8 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 122
9 Observations: Oceanic Climate Change and Sea Level. in: Climate Change 2007: The Physical Science Basis, Intergovernmental Panel on Climate Change
10 SANDAG 2010 Climate Action Strategy - Final, p. 14 and The San Diego Foundation's Focus 2050 Study: San Diego's Changing Climate – A Regional Wakeup Call, p. 6
landsides during winter months. Specifically, researchers and the California Department of Transportation (Caltrans) expect increased damage of transportation infrastructure such as coastal and inland highways, railways, and associated business interruptions. The related debris impacts are historically well known to California, but if they become more frequent, they will create greater costs for the state and require more frequent repairs.11

The largest projected damages will come from sea-level rise up to 12-18 inches higher in San Diego.12 This threatens large portions of California’s coastal transportation, housing, and energy-related infrastructure.13 Sea-level rise Impacts on transportation infrastructure will include flooding of roads, railways, transit systems, and airport runways in coastal areas. A substantial amount of this ground transportation infrastructure is predicted to be at risk from sea-level rise by 2100, including 2,500 miles of roads and rails. Such infrastructure is vital to the state’s economy for both the movement of commercial freight and the ability of Californians to get to work and school. In the San Francisco Bay Area, the major airports of San Francisco and Oakland are near sea level and would require additional elevation, protection, or relocation to remain functional.14

Evidence of sea level rising is already apparent. After at least 2,000 years of little change, sea level rose by roughly 8 inches over the past century. Satellite data available over the past 15 years show sea level rising at a rate roughly double the rate observed over the past century.15

A report cited in the 2009 California Climate Adaptation Strategy estimates that the cost of no action in California would be on the order of “tens of billions of dollars in direct costs” and would “expose trillions of dollars of assets to collateral risk.” The San Diego region also would likely have to bear its share of the cost climate change impacts will produce.

**State of the Planning Practice**

In general, transportation agencies nationwide are not yet incorporating climate change adaptation measures into long-range planning. The large uncertainty in the location and magnitude of impacts makes agencies reluctant to take major action on adaptation, given the multitude of other pressing demands for Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs), and their funding limitations.16 As a result, agencies that are considering adaptation are typically focusing on building awareness of the issues and on research. However, there are recent examples summarized in this report where this focus is beginning to change and that more agencies are recognizing the value of taking action earlier.

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12 The San Diego Foundation’s Focus 2050 Study: San Diego’s Changing Climate – A Regional Wakeup Call, p. 4
13 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 119
14 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 68
15 Observations: Oceanic Climate Change and Sea Level. in: Climate Change 2007: The Physical Science Basis, Intergovernmental Panel on Climate Change
Identification of Problems

The states’ transportation infrastructure faces potential risk from climate change impacts stemming from changes in temperature, sea-level rise and precipitation. To summarize the changing risks that California’s transportation infrastructure may be facing from climate change, the likelihood of occurrence of the projected consequences was qualitatively assessed. The economic cost associated with the required alteration, fortification, or relocation of existing infrastructure is likely to be in the tens of billions. The resulting risk profile for California’s transportation infrastructure can be characterized as follows:

- Temperature extremes can increase the risk of road and railroad tracks buckling, decreasing transportation safety and creating higher maintenance costs.
- Winter storms, especially if coinciding with earlier snowmelt and high runoff, can cause flooding and physical damage to culverts, canals, tunnels, coastal highways, runways, and railways, and associated business interruptions.
- More drought, fires, and intense rainfall events will produce more mud- and landslides, which can disrupt major roadways and rail lines. These impacts will likely be felt in the San Diego region.
- Sea-level rise is likely to cause the greatest impacts on California’s and on the San Diego region’s infrastructure, including more frequent storm-related flooding of airports, seaports, roads, and railways in floodplains due to higher sea levels.
- As sea level rises at a faster pace and coastal storm surges increase, existing fortifications will be increasingly inadequate and need to be raised, and areas previously not at-risk will become at risk.

DISCUSSION

The following section focuses on efforts being made by federal, state, and local governments. Their different approaches to climate change adaptation provide insight and background to the policy and issues section in this paper.

Potential Solutions and Alternatives

Federal

Interagency Climate Change Adaptation Task Force

In the Fall of 2009, in response to President Obama’s Executive Order 13514, the U.S. Global Change Research Program (USGCRP), the White House Council on Environmental Quality (CEQ), the White House Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA) convened the Interagency Climate Change Adaptation Task Force to begin the development of federal recommendations for adapting to climate change impacts both domestically and internationally. More than twenty federal agencies, departments, and offices are participating in this Task Force and contributing their operational capabilities and expertise through

17 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 128
a series of workgroups, coordinated with USGCRP, on specific topics related to climate change adaptation.\textsuperscript{19}

Goals of the interagency adaptation work include:

- Forming recommendations toward a national adaptation strategy that uses a set of best practices derived from the best available science and the experience and knowledge of governments and stakeholder groups across the United States and abroad.
- Integrating climate change resilience and adaptive capacity into federal government operations, and coordinating interagency preparations for climate change impacts with domestic and international activities.
- Broadening the understanding of vulnerability to climate impacts, equipping communities with information to use in local adaptation policies, and learning from communities who have taken steps to adapt.

The Task Force has found that there already is substantial U.S. government and non-government activity towards adapting and building resilience to climate change risks. Current activities include landscape conservation cooperatives supported by the Department of the Interior, to a comprehensive risk assessment of Gulf Coast transportation infrastructure by the Department of Transportation, and the Environmental Protection Agency’s efforts to support local decision-makers through Climate Ready Estuaries.

As required by Executive Order 13514, the Interagency Climate Change Adaptation Task Force will deliver a report to the President in the fall of 2010. The report will detail the development of domestic and international dimensions of a U.S. strategy for adaptation to climate change, agency actions in support of that strategy development process, and recommendations for any further measures to advance towards a national strategy. The Task Force will not, however, deliver a complete U.S. adaptation strategy to the President.

Over the next several months, the Interagency Climate Change Adaptation Task Force may refine recommendations around structural issues such as improving and integrating science results in developing policy and a framework for federal agency adaptation, as well as cross-cutting topics, including water resources management and international adaptation. The Task Force also may establish additional workgroups, in cooperation with USGCRP, including those to inform the development of a national strategy in the areas of communications and capacity-building, coordination and collaboration across government and with partners, evaluation and learning, and other priority issues. Through a series of regional outreach meetings and pilot activities, the Task Force will continue moving towards recommendations on the development of a national strategy on climate change adaptation.

In tandem with these efforts, the U.S. Department of Transportation’s Federal Highway Administration (FHWA) and the U.S. Army Corps of Engineers (USACE) are in the beginning stages of engaging in climate change adaptation issues. FHWA’s approaches to climate change are being looked at as a Surface Transportation Safety and Operations issue. In this context, FHWA will be

engaging state and local agencies or projects that require FHWA preliminary engineering and NEPA reviews.

In the area of outreach and education, FHWA has established peer exchanges, a Transportation & Climate Change Clearinghouse, and a FHWA Adaptation Working Group. It also is providing technical assistance in the areas of modeling, adaptation, and research.20

Also at the federal level, the USACE is working towards addressing climate change adaptation. In its circular published in July 2009, guidance is provided for incorporating the direct and indirect effects of projected future sea level change in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects.21

State of California

**2009 California Climate Adaptation Strategy (CAS)**

The changes necessary to protect the state’s transportation infrastructure will require collaboration between multiple state, regional, and local agencies. In an effort to begin protecting these assets, Governor Schwarzenegger signed Executive Order (EO) S-13-08. This order provides direction on developing California’s first statewide adaptation effort. It requires the California Natural Resources Agency to develop the CAS as the state’s first comprehensive guide on climate adaptation.

The CAS was developed with the input of numerous stakeholders including state agencies and seven climate adaptation working groups.22 Although the CAS focuses on state level efforts, climate change vulnerability assessment planning tools, policies, and strategies will be integrated at the local level (MPOs, RTPAs) in conjunction with Caltrans.23 The CAS states that impacts of climate change on infrastructure will vary at the local level, but it is certain they will be widespread and costly in human and economic terms, and will require significant changes in the planning, design, construction, operation, and maintenance of California’s infrastructure.24

The CAS has identified the following priorities in addressing climate adaptation for California state agencies. The near-term actions referenced below are those actions that have been identified and which can be initiated or completed by November 2011. The long-term actions include those recommended actions that will require support from California and collaboration with multiple state agencies.25

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20 Summary Report: Peer Workshop on Adaptation to Climate Change Impacts Appendix A - Adaptation of Transportation Infrastructure to Global Climate Change (GCC) Effects: Implications for Design and Implementation, U.S. Department of Transportation, Federal Highway Administration

21 United States Army Corps of Engineers (USACE) circular: Water Resource Policies and Authorities Incorporating Sea Level Change Considerations in Civil Works Programs

22 2010 California Regional Transportation Plan Guidelines (Final Draft, February 8, 2010), p. 136

23 2010 California Regional Transportation Plan Guidelines (Final Draft, February 8, 2010), p. 137

24 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 132-134

25 2009 California Climate Adaptation Strategy, California Natural Resources Agency, p. 127
Strategy 5 – TRANSPORTATION: Develop a detailed climate vulnerability assessment and adaptation plan for California’s transportation infrastructure.

Near-Term and Long-Term Actions:

a. Vulnerability and Adaptation Planning – Business, Transportation and Housing Agency (BTH) and Caltrans will develop a climate vulnerability plan that will assess how California’s transportation infrastructure facilities are vulnerable to future climate impacts, assess climate adaptation options, prioritize for implementation, and select adaptation strategies to adopt in coordination with stakeholders. This plan will be coordinated with an updated climate mitigation plan that will act as BTH’s and Caltrans’ overall transportation climate policy.

i. Develop a transportation use “hot-spot” map – Caltrans will research and identify transportation “hot spots” to identify across the state where the mixture of climate change impacts, population increases, and transportation demand increases will make communities most vulnerable to climate change impacts. Caltrans will include in this analysis how the lowest-income communities in hot spot areas will be impacted.

b. Economic Impacts Assessment – Complete an overall economic assessment for projected climate impacts on the state’s infrastructure under a “do nothing” scenario and under climate policy scenarios identified by BTH/Caltrans.

i. Prepare a list of transportation adaptation strategies or measures based on the “hot spot” map and prepare an economic assessment and cost-benefit analysis for these strategies vs. a do nothing scenario.

Strategy 6 – TRANSPORTATION: Incorporate climate change vulnerability assessment planning tools, policies, and strategies into existing transportation and investment decisions.

Near-Term and Long-Term Actions:

a. Integrate Mitigation and Adaptation System-wide – Caltrans will develop and incorporate climate change mitigation and adaptation policies and strategies throughout state strategic, system and regional planning efforts. These will be included in key phases of the following planning and project development phases when appropriate:

i. Strategic Planning (Governor’s Strategic Growth Plan and California Transportation Plan)
ii. System Planning (i.e., District System Management Plan, Interregional Strategic Plan, Corridor System Management Plan, and Transportation Concept Report)
iii. Regional Transportation Planning (RTP Guidelines and Regional Blueprint Planning)
v. Programming (State Transportation Improvement Program, State Highway Operations and Protection Program, California Transportation Commission State Transportation Improvement Program Guidelines)
Strategy 7 – TRANSPORTATION: Develop transportation design and engineering standards to minimize climate change risks to vulnerable transportation infrastructure.

Near-Term and Long-Term Actions:

a. Transportation infrastructure assessment - Caltrans will assess existing transportation design standards as to their adequacy to withstand climate forces from sea-level rise and extreme weather events beyond those considered.

b. Buffer zone guidelines - Develop guidelines to establish buffer areas and setbacks to avoid risks to structures within projected “high” future sea-level rise or flooding inundation zones.

c. Stormwater quality - Assess how climate changes could alter size and design requirements for stormwater quality best management practices.

Strategy 8 – TRANSPORTATION: Incorporate climate change impact considerations into disaster preparedness planning for all transportation modes.

Near-Term and Long-Term Actions:

a. Emergency Preparedness – Caltrans provides significant emergency preparedness abilities for all transportation modes across the state. The transportation system is sensitive to rapid increases in precipitation, storm severity, wave run-up, and other extreme weather events. Caltrans will assess the type of climate-induced impact information necessary to respond to district emergencies. Results will be incorporated into existing operations management plans.

b. Decision Support (Near-Term) – Caltrans will identify how climate impact information can be integrated into existing Intelligent Transportation Systems and Transportation Management Center operations.

2010 California Regional Transportation Plan Guidelines

Subsequent to the passage of California Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), the California Transportation Commission (CTC) adopted an addendum to the 2007 RTP Guidelines in May 2008 to address a request from the California Legislature to ensure climate change issues were incorporated in the RTP process. 26

On April 7, 2010, the CTC approved the 2010 RTP Guidelines which incorporate new planning requirements as a result of Senate Bill (SB) 375 and also incorporate the addendum to the 2007 RTP Guidelines. SANDAG staff has been participating in this update process. SB 375 requires MPOs to identify a forecasted development pattern and transportation network that will meet greenhouse gas emission reduction targets specified by the California Air Resources Board (ARB) through their RTP planning processes. 27

26 2010 California Regional Transportation Plan Guidelines (Final Draft, February 8, 2010), p. 14
27 2010 California Regional Transportation Plan Guidelines (Final Draft, February 8, 2010), p. 14
In addition, the CTC references the transportation adaptation strategies contained in the 2009 CAS for guidance on addressing Climate Change Adaptation. The CTC also endorses the CAS’ position on the need for significant changes in the planning, design, construction, operation, and maintenance of California’s infrastructure. The changes necessary to protect the state’s transportation infrastructure will require collaboration between multiple state, regional and local agencies. Regional planning agencies should incorporate these practices in the implementation of transportation strategies in conjunction with Caltrans, to the extent that they are feasible.28

**Best Practices**

The 2010 California Regional Transportation Plan Guidelines states that notwithstanding a lack of reliable information on the future impacts of sea-level rise, precipitation changes, or extreme heat events, MPOs and RTPAs should begin to address climate change in their long-range transportation plans. There are numerous ways planning agencies can begin preparing for climate change adaptation on the transportation infrastructure including preliminary mapping of infrastructure that is vulnerable to changes in precipitation, heat, and sea-level rise. It is also recommended that design and planning standards be re-evaluated to accommodate potential changes. It is important to ensure that planned infrastructure is engineered and built in locations that can withstand future climate change impacts.

**The California Environmental Quality Act (CEQA)**

On December 30, 2009, the Resources Agency adopted an amendment to the CEQA Guidelines, Section 15126.2 Consideration and Discussion of Significant Environmental Impacts now requires an Environmental Impact Report (EIR) to evaluate the effects of climate change on the locating of a project in areas susceptible to hazardous conditions, e.g. floodplains, coastlines, wildfire risk areas as identified in authoritative hazard maps, risk assessments or in land use plans addressing such hazards areas. This Amendment became effective on March 18, 2010, and is now included in the California Code of Regulations.29

**Other Agencies**

**City of Chula Vista**

In 2009, the City of Chula Vista began developing its Climate Change Adaptation Strategy (CCAS).30

The development of the CCAS also coincides with its participation in the International Conference on Climate Adaptation held in Seville, Spain in May 2009 and the resulting adaptation planning priorities (known as the “Seville Declaration”) agreed upon by various California and Spanish government entities. This cross continent exchange was held because of the similar climates the Andalusia region of Spain and Southern California share and potentially similar adaptation strategies they would likely need to implement. Participants of this event representing cities in California and Spain will continue an information exchange on climate adaptation best practices as both regions develop their adaptation strategies.

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28 2010 California Regional Transportation Plan Guidelines (Final Draft, February 8, 2010), p. 137
29 California Environmental Quality Act (CEQA) Proposed Guidelines Amendments & Related Materials ceres.ca.gov/ceqa/docs/Accepted_and_Transmitted_Text_of_SB96_CEQA_Guidelines_Amendments.pdf
In addition, the City of Chula Vista established a Climate Change Working Group (CCWG), which is comprised of Chula Vista residents, businesses, and community group representatives to assist in developing climate adaptation strategies suitable for Chula Vista. The Climate Change Working Group will be asked to use the following guiding principles to evaluate and prioritize possible adaptation options:

1. Seek out the best available science to understand local climate change impacts and their relative risks;
2. Give priority to policies that can build on existing work rather than policies which require new sources of funding or staffing;
3. Ensure that the legitimate interests of all City stakeholders are considered in evaluating options;
4. Develop policies flexible enough for future incorporation of new science or improved modeling, but defined well enough for staff to implement;
5. Ensure that adaptation strategies complement climate protection measures already in place in Chula Vista;
6. Consider strategies to adapt to both short- and long-term impacts from climate change, but only in areas where the group decides there is enough evidence to support the work;
7. Prioritize strategies in accordance with the degree of risk that different climate impacts pose to Chula Vista, its residents, and businesses;
8. Recommend adaptation strategies that address the most immediate risk in the most financially feasible way (i.e., require the least General Fund support);
9. The strategies chosen should not cause a significant adverse economic and/or environmental impact to the community;
10. Reach consensus on a preferred list of final recommended adaptation strategies which best meets all City stakeholders’ needs.

Following these guiding principles and through a community-based process, the development of a local CCAS would be incorporated into the City’s current Climate Action Plan, for City Council review and consideration by the end of 2010. The CCAS would address the following sectors projected to be adversely affected by climate change:

- Water Management
- Energy Management
- Infrastructure & Resources
- Public Health
- Wildfires
- Ecosystems & Biodiversity
- Business & Economy
San Francisco Bay Area

The Bay Conservation and Development Commission (BCDC) is dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay's responsible use. The BCDC has taken a lead role in adaptation planning for the Bay Area. The BCDC will consider an amendment to the San Francisco Bay Plan, which regulates development within the 100-year floodplain of the Bay, to address climate change including adaptation strategies. The following are proposed amendments:

1. Proposed additions to Bay Plan findings and policies

   a. Create a climate change policy section of the Bay Plan that addresses the following:

      (1) Updating sea-level rise scenarios and using them in the permitting process
      (2) Developing a long-term strategy to address sea-level rise and storm activity and other Bay-related impacts of climate change in a way that protects the shoreline and the Bay; and
      (3) Working with the Joint Policy Committee (JPC) and other agencies to integrate regional mitigation and adaptation strategies and adaptation responses of multiple government agencies, to analyze and support environmental justice issues, and to support research that provides useful climate change information and tools.

2. Proposed changes to existing Bay Plan findings and policies

   a. Amend findings and policies on public access to provide public access that is sited, designed and managed to avoid significant adverse impacts from sea-level rise and ensure long-term maintenance of public access areas.

   b. Amend findings and policies on tidal marshes and tidal flats to ensure that buffer zones are incorporated into restoration projects where feasible and sediment issues related to sustaining tidal marshes are addressed.

   c. Amend the policies on safety of fills by updating the findings and policies on sea-level rise and moving some to the new climate change section of the Bay Plan.

   d. Amend the policies on protection of the shoreline to address protection from future flooding.

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32 Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline. San Francisco Bay Conservation and Development Commission, p. 7
3. The Metropolitan Transportation Commission (MTC) included the following actions to combat global warming and help clean Bay Area air in its Transportation 2035 Plan:

- Commits $400 million to fund a multi-agency Transportation Climate Action Campaign to reduce our carbon footprint, complementing MTC’s Transportation for Livable Communities Program, Regional Bicycle Program, Regional Rideshare Program, and other Transportation 2035 bicycle and pedestrian investments.

**King County, Washington**

King County Climate Plan proposes to protect the integrity and safe operation of regional transportation infrastructure from climate change impacts. King County Road Services Division will incorporate climate change impacts information into construction, operations, and maintenance of infrastructure projects.

Actions already underway by King County Road Services Division include:

- Evaluation of higher flows on bridge and culvert design as well as seawall modifications;
- Participation in King County’s interdepartmental climate change adaptation team; and
- Initiation of educational efforts to facilitate the sharing of information among staff on the projected impacts of climate change.

In the near term, King County Road Services Division will incorporate climate change into its own planning and design documents, and comments on others’ planning and design documents, as they come up for revision. King County Road Services Division also plans to identify and expand policies and plans that adjust transportation infrastructure improvements and maintenance to ongoing and anticipated climate and weather changes. Additionally, the division is looking at ways to incorporate climate changes predicted in the future into current transportation project designs. For example, the Road Services Division is currently rebuilding over 57 bridges and 40 culverts that will need to be designed to improve streamflows and endure the most significant impacts of climate change.

In the long-term, some strategies that are being considered by Road Services Division include:

- Replacing or rehabilitating bridges in order to improve floodwaters conveyance and to avoid scour during high flows;
- Using pervious pavement and other low impact development methodologies to manage stormwater through reduced runoff and onsite flow control;
- Modifying existing seawalls to avoid failures in transportation facilities.

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33 Transportation 2035 Plan Draft Environmental Impact Report. Metropolitan Transportation Commission, p. 14
34 2007 King County Climate Plan (February 2007). King County Departments and Divisions on Climate Change Impacts, p. 118
Issues and Policy Implications

One of the goals identified in the SANDAG 2010 Climate Action Strategy is to protect transportation infrastructure from climate change (Goal 4). This Strategy acknowledges that in addition to being the number one source of climate change emissions in our region, the transportation sector is threatened by the impacts of climate change. Adapting transportation infrastructure to prepare for climate change is emerging as a new concern for designing future projects as well as maintaining our current system. As such, the tools and methodologies for evaluating and adapting to impacts are still in the early stages of development.

The Strategy outlines the following objectives and potential policy measures:35

Objective 4a. Protect transportation infrastructure from damage due to extreme heat

Policy Measures

- Direct research at developing materials for transportation infrastructure that is better suited to withstand high temperatures.
- Accelerate inspections schedules and prepare for increased maintenance and costs.
- Utilize adaptive management and monitoring to determine which, if any, adaptive strategies should be incorporated in transportation planning.
- Address adaptation issues in the design of new projects and when improvements are made to existing infrastructure.

Objective 4b. Protect transportation infrastructure from sea-level rise and associated higher storm surges

Policy Measures

- Develop a climate vulnerability plan that will identify areas in San Diego at high risk of damage from sea-level rise and storm surges.
- Modify standards for project design and construction to account for increased potential storm surge elevations and frequency.
- Engage a multi-disciplinary team of climate change and coastal experts along with hydraulics and bridge design specialists during scoping process of coastal bridge projects.
- Utilize adaptive management and monitoring to determine which, if any, adaptive strategies should be incorporated in transportation planning.
- Address adaptation issues in the design of new projects and when improvements are made to existing infrastructure.

35 SANDAG’s 2010 Climate Action Strategy - Final, p. 28
Objective 4c. Protect transportation infrastructure from wildfire-associated mudslides

Policy Measures

- Improve bank stabilization and erosion control measures near important transportation lines after wildfire.
- Address adaptation issues in the design of new projects and when improvements are made to existing infrastructure.

A main issue of concern is the lack of quantitative data on vulnerability available to begin to make concrete policy decisions and conduct economic impact assessments. The 2050 RTP is likely to produce a qualitative assessment of potential risks and preliminary evaluation of climate change adaptation strategies. At the project level, environmental clearance documents would conduct further evaluation related to climate change.

Currently, DOTs and their partner agencies are evolving toward "risk management" approaches to asset management and investment programs. In a limited resource environment, a process that seeks to understand and manage the risks to the transportation system from climate change, rather than continuing with a "worst first" approach, is key to ensuring the most critical infrastructure continues to function adequately. Facilitation of cross-disciplinary collaboration (e.g., Design and Planning) within Caltrans and between local agencies is recommended. 36

RECOMMENDATIONS

1. SANDAG staff will continue to monitor the implementation of strategies in the CAS and evaluate which ones should be incorporated into the 2050 RTP.

2. The 2010 California RTP Guidelines suggest several ways to begin to address climate change adaptation issues. Following these Guidelines, SANDAG will evaluate the feasibility of developing preliminary mapping of infrastructure that is vulnerable to changes in precipitation, heat, and sea level rise in preparation for climate change adaptation on the transportation infrastructure. 37

3. Staff will monitor the implementation of Executive Order S-13-08 which states that the California Resources Agency, in cooperation with the California Department of Water Resources (DWR), California Energy Commission (CEC), California’s coastal management agencies, and the California Ocean Protection Council (OPC), shall request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea-level Rise Assessment Report. This report will guide state agencies that are planning construction projects in areas vulnerable to future sea-level rise shall, for the purposes of planning, consider a range of sea-level rise scenarios for the years 2050 and 2100 in order to


37 United States Army Corps of Engineers (USACE) circular: Water Resource Policies and Authorities Incorporating Sea-Level Change Considerations in Civil Works Programs.
assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. This report would be completed by March 2011.

4. The SANDAG 2010 Climate Action Strategy acknowledges that climate changes and their associated impacts vary greatly from location to location. Although national and international action is essential, many important decisions about how best to manage systems affected by climate change are made at the local and regional levels. The Strategy recommends that regional and local planning should reinforce and complement the recommendations given at the state and federal levels. Therefore, climate change adaptation recommendations from state and federal agencies will continue to be monitored and evaluated.

5. Staff will evaluate crossborder climate change adaptation strategies.

For Future Analysis

1. To develop an adaptation strategy tailored to the San Diego region, SANDAG would seek funding at the state or federal level to partner with other regional agencies to conduct a vulnerability analysis. However, before conducting this analysis, the NAS California Sea-level Rise Assessment Report and any similar research would be analyzed to assess whether additional vulnerability analysis would be necessary for the San Diego region. Understanding vulnerability to the extent feasible within the limitations of available science and resources is critical to developing adaptation strategies. This analysis would include the latest projections on sea-level rise scenarios and identify existing and planned vulnerable transportation infrastructure. Adaptation strategies could be individually tailored to each of these.

In this context, vulnerability occurs over a long timeframe and affects people differently in the near-term and the long-term. Therefore, both short-term and long-term adaptation strategies should be identified. In the long-term, a variety of adaptation strategies involving many potential partners will be needed to deal effectively with sea-level rise in San Diego.

2. As Caltrans and BTH advance on the implementation of transportation strategies identified in the 2009 California Climate Adaptation Strategy, evaluate data and findings that could be applicable to future RTP updates and infrastructure projects.

3. In order to avoid duplicating research efforts, existing and planned research will be assessed for its applicability to better understand the impact of changes in sea level in other areas of strategic and economic importance, such as San Diego Naval Air Station North Island, San Diego International Airport, and the Port of San Diego. This analysis should provide the basis for further analysis of coastline vulnerabilities and the development of risk management strategies involving the public and private sectors. This analysis should also be conducted in the context that sea-level rise is expected to accelerate in decades following 2050.

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38 SANDAG’s 2010 Climate Action Strategy - Final, p. 14
39 Climate Change-Related Impacts in the San Diego Region by 2050, p. 38
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2050 REGIONAL TRANSPORTATION PLAN: UPDATE ON THE URBAN AREA TRANSIT STRATEGY

Introduction

Every four years, SANDAG updates its Regional Transportation Plan (RTP). The current RTP, which extends to the year 2030, was adopted in 2007. SANDAG is currently preparing a 2050 RTP, which is scheduled for adoption in 2011.

An important part of the development of the 2050 RTP is the preparation of an innovative and visionary “Urban Area Transit Strategy.” The Urban Area Transit Strategy will serve as the basis for development of the regional transit network to be included in the 2050 RTP along with all of the other modal networks (highway, high occupancy vehicle (HOV)/Managed Lanes, bicycle and pedestrian improvements, freight improvements, etc.). As part of the strategy, three draft transit network alternatives have been developed for analytical purposes.

The purpose of today's report is threefold: (1) to introduce the draft transit network alternatives and summarize feedback received to-date; (2) to review proposed transit mode share goals for key corridors/communities; and (3) to present a preliminary summary of the performance of each network. These items will help inform Board discussion on Item 3B, the development of the 2050 Unconstrained Transportation Network.

Initial Transit Scenarios and Feedback Received

Through the planning process, staff has developed and begun testing three transit network alternatives with a focus on the urban areas of the San Diego region. Ultimately, one of the networks (or a combination or variation) will be incorporated into the unconstrained transportation network in the 2050 RTP. The overarching goal is to create a world-class transit system for the San Diego region in 2050 that significantly increases the use of transit, walking, and biking in the urbanized areas of the region, makes transit more time-competitive with the automobile, maximizes the use of transit during peak periods, and reduces greenhouse gas emissions and vehicle miles traveled in the region.

The transit alternatives under study are grouped into three themes and illustrated conceptually as follows:
The three transit alternatives have been intentionally designed to vary significantly from one another in order to test how different transit strategies might function in the long-term when compared across a number of performance measures.

The draft networks have been presented to the Transportation and Regional Planning Committees, various SANDAG working groups, an outside Peer Review Panel, and at the five 2050 RTP public workshops (held April 26 - May 6, 2010). Subway-style maps of each draft alternative are provided in Attachments 1 - 3, and a brief description of the initial concept behind each alternative is provided in Attachment 4. The study area for the Urban Area Transit Strategy is provided in Attachment 5 for reference purposes. More detailed maps, including transit routes and station locations, are available on the SANDAG Web site at www.sandag.org/uats.

In Item 3B of today’s report, staff is recommending initial routes for incorporation into an unconstrained regional transit network for the 2050 RTP that is a combination of network elements from the draft transit alternatives based on comments by the policymakers, stakeholders, the public, and the Peer Review Panel; the overall performance of the networks with respect to identified performance measures (discussed below); the performance of specific routes and modes; and other factors. The report goes on to assess the regional highway network in order to set the stage for developing a comprehensive transportation network.

Feedback Received

In general, staff has received positive feedback on the concept of developing and testing alternative transit strategies, and on the draft networks developed to-date. At its April 16, 2010, meeting, Transportation Committee members articulated support for the networks being tested in the three alternatives and expressed excitement at the prospect of building a robust transit network that can enhance regional mobility options and potentially influence the region’s reduction of greenhouse gas emissions.

During the remainder of April, staff presented the transit networks to the Regional Planning Technical Working Group (TWG), the Cities/County Transportation Advisory Committee (CTAC), the Regional Planning Stakeholders Working Group (SWG), and the Quality of Life Stakeholder Working Group. Earlier this month, the networks also were presented to the Regional Planning Committee. Comments by the working groups generally have been positive. While some working group members are concerned that the alternatives do not sufficiently emphasize transit in the less urbanized areas, others are concerned that the networks are too broad and there is insufficient focus on the urban core. In addition, working group members have encouraged staff to conduct analysis on the effects of land use assumptions, user charges, and transportation demand management before finalizing mode share goals. Suggestions also have been received to identify regionally-based transit mode share figures, in addition to corridor-based mode share figures. Other ideas included evaluating a broader range of ideas for last-mile solutions that could include the use of taxicabs, addressing parking pricing, and considering fare-free zones or fare-free routes as a way of increasing mode share.

A wide range of comments were made at the RTP public workshops. Attachment 6 provides a sampling of some of the comments received. SANDAG is encouraging additional comments via the Web site at www.sandag.org/uats.
Peer Review Panel Key Findings

As a unique part of the planning process, SANDAG assembled an outside Peer Review Panel to critically assess the alternative networks. The Peer Review Panel, which consisted of two public sector and two private sector panelists with extensive professional experience in land use, economics, transportation, congestion management, transit management, and transit-oriented development, convened in San Diego during the week of April 19, 2010. (Peer Review Panel biographies are included in Attachment 7.)

Generally, the Peer Review Panel felt that the Transit Propensity and Many Centers transit networks had merit and could each result, to varying degrees, in a successful long-term transit network. The Panel stated that while the 2050 RTP will define the region’s long-term mobility vision, the plan’s ultimate success will be grounded in the implementation of near-term demonstration or “catalyst” projects that showcase elements of the transit vision, particularly the integration of transit into smart growth areas. More specifically, the following observations were made about the alternative transit scenarios:

- **Transit Propensity**: The Panel observed that this scenario may be too focused on some geographically-concentrated areas to the exclusion of other areas (such as major employment areas, University City, and North County) to meet the region’s long-term mobility goals.

- **Commuter Point-to-Point**: The Panel expressed nervousness about promulgating a type of mobility that supports a dispersed land use pattern. The Panel felt that this scenario may encourage longer trips by both autos and transit, and that this scenario portrayed a more “business as usual” approach that may not have the ability to influence land use decisions toward more integrated communities and sustainability.

- **Many Centers**: The Panel commented that this scenario provides a solid vision, but may need to be refined. Panelists suggested focusing transit investments into a smaller number of smart growth centers that either already have high housing and employment densities or have smart growth plans in the early phases of the regional growth forecast, thereby placing a priority on existing and near-term smart growth. The Panel recommended that SANDAG revisit its Smart Growth Concept Map and consider making changes that might coalesce the smaller smart growth areas into larger-scale ones, thereby promoting “smarter” smart growth.

In addition, the Panel provided broader, more global observations summarized in Attachment 8, focusing on issues such as economic competitiveness; technological savoir; world-class region; sustainability and co-benefits; land use development around transit stations; land use, freeways, and parking; project prioritization; leadership and champions; and dedicated funding sources. In addition to the group findings, several Peer Review Panelists also contributed individual opinions, summarizing their observations of the region’s strengths and weaknesses. Those individual viewpoints are contained in Attachment 9.

Interestingly, many of the observations by the Peer Review Panel reinforce some of the key “Overarching Themes” and “Considerations for San Diego” summarized in the Executive Summary of the Lessons Learned from Peer Regions report produced by the SANDAG consultant team on this project when it began late last year. These overarching themes and considerations are contained in Attachment 10.
Proposed Transit Mode Share Goals

The Urban Area Transit Strategy work program includes developing peak-period transit mode share goals for regionally significant corridors/communities for 2050. There are two general issues that must be addressed in identifying mode share goals: first, how to determine the most suitable corridors/communities for which to establish mode share goals; and second, how to set appropriate mode share goals for the selected areas. Theoretically, the goals should be ambitious yet achievable, based on quantifiable trends and patterns, and have the ability to be measured over time. As a starting point for identifying where transit mode share goals would be most appropriate, staff identified geographic areas and travel corridors based on:

- High-volume travel corridors (all motorized trips), both current and future, that factor in trip purpose, trip origins and destinations, and time of day (such as peak-period vs. off-peak);
- Major job centers that attract large volumes of peak-period trips;
- Land use patterns that focus on locations with transit-supportive land uses (such as higher densities, walkable communities) and where access to transit (and often existing transit mode share) is high; and
- Existing transit markets that have been identified through the Metropolitan Transit System Comprehensive Operational Analysis (COA) and the North County Transit District Mobility Plan to ensure that RTP transit mode share goals are consistent with current short-range transit plans.

Attachment 11 illustrates the travel corridors, major employment areas, and high-activity areas for use in identifying peak-period transit mode share goals.

After conducting research, it is staff’s conclusion that very few areas have actually established transit mode share goals for corridors or communities. As a result, an approach similar to one used in Brisbane, Australia, is being proposed to develop the mode share goals. This approach involved aiming to increase the proportion of trips made on public transit by 50 percent between the plan’s initial and target year. The plan recognized that achieving a 50 percent increase in public transit’s share of all travel would be an ambitious, yet achievable, target over the 14-year planning period. There was initial discussion of doubling the mode share (increasing it to 100 percent), and it was found that that goal would be impossible without requiring significant revisions to curtail the expansion of urbanization and strict new measures to restrain single-occupancy vehicle use during peak-period commute times. Neither of those actions appeared to be possible at that time, given community lifestyle and travel patterns, but the plan left open the possibility of revisiting the target in future plans.

Proposed Approach

In the case of the San Diego region, the staff recommendation is to start with a more aggressive base year — a base year consisting of a combination of the 2030 RTP transportation network and the 2050 land uses — as the foundation upon which to set peak-period, home-to-work transit mode share goals in the urban area. This would provide a higher starting point for any proposed mode share increase. Staff then proposes applying a goal of a 25 percent increase in the peak-
period transit mode share over this base year assumption. (This approach is different than the Brisbane method, which used an existing base year of 1997 as the starting point for a 50 percent increase.) The approach would be applied to the urban area, as well as to the identified corridors/areas.\(^2\)

For example, the current 2030 RTP Unconstrained Network would increase the mode share for peak-period, home-to-work trips within the Urban Area Transit Strategy study area from the 2008 level of 5 percent to the 2030 projected level of 9 percent, an increase of 80 percent between 2008 and 2030. Applying the 25 percent goal would mean increasing the 2030 RTP mode share an additional 25 percent from 9 percent to 11 percent as the starting point for the 2050 transit mode share goal for the study area. The end result would be a rise in the mode share by 120 percent between 2008 and 2050. Because the year 2050 is 40 years away, and the current tools to predict human travel behavior that far into the future are not completely accurate, staff is proposing that the goals be generalized into “goal ranges” based on patterns of geographic groupings. This would result in a 10-15 percent transit mode share goal range for the urban area. This would more than double the peak-period, home-to-work transit mode share in the urban area during this time period. When considering the proposed mode share increases from existing levels to the year 2030 in the current RTP, it seems reasonable to set 25 percent as an ambitious, yet achievable, goal.

Proposed Goal Ranges

Attachment 12 contains the information described above and the peak-period, home-to-work transit mode share goal ranges based on the geographic groupings for the various corridors/areas. Attachments 13a, 13b, and 13c illustrate the 2008 peak-period transit mode shares, the mode shares for the 2030 RTP Network with the 2050 land uses, and the proposed 2050 transit mode share goal ranges from a geographic perspective.

Next Steps for Mode Share Goals

Over the next few months, staff proposes to conduct sensitivity tests by corridor/area to see how various adjustments could further affect peak-period transit mode share. These may include options such as increasing transit frequencies, increasing transit travel speeds, testing parking pricing, adjusting land use assumptions, or other scenarios to help refine the peak-period, home-to-work transit mode share goal ranges.

In addition, in an effort to consider mobility options from a multimodal perspective, staff also will examine mode share goals for walking/biking, carpooling, and vanpooling, which, when combined with transit mode share goals, can ultimately provide a more comprehensive view of overall non-single-occupancy vehicle peak-period mode share for incorporation into the 2050 RTP.

The Transportation and Regional Planning Committees are discussing the proposed methodology and the resulting transit mode share goal ranges at their joint meeting on June 4, 2010, and any comments made will be provided verbally at the June 11 Board Policy meeting. Staff will report the modeled transit mode share performance at a future meeting.

\(^2\) Having transit mode share goals for the urban area and for several specific corridors/areas, rather than a single regionwide transit mode share goal, better reflects how transit investments are made, that is, focused on specific areas where the propensity for using transit is the highest.
Performance of Transit Network Alternatives

Analysis is underway to compare the three transit networks against one another, as well as against a baseline scenario, which consists of an overlay between the 2030 RTP transportation network and the land use assumptions included in the 2050 Regional Growth Forecast. The analysis is organized according to performance measures that line up with the following objectives that support the overall transit goals for the San Diego region in 2050:

- Increase peak-period mode share
- Maximize transit ridership
- Develop a cost-effective and implementable transit system
- Support an efficient and effective transportation system
- Address the need for sustainability
- Address the need for environmental justice/social equity
- Make transit more time competitive with the car

These transit-specific objectives also are consistent with the overall 2050 RTP goals and objectives. (The detailed set of performance measures was presented to the Transportation Committee at its April 16, 2010, meeting, and is available on the Web site at www.sandag.org/uats.)

Attachment 14 contains initial data comparing the performance of the three transit alternatives against the 2008 transit network and the baseline scenario described above. In order to isolate the performance of transit in each alternative, staff held constant the highway network and the land use assumptions of each transit network.3

Initial analysis shows that all three scenarios yield significantly better results than the existing (2008) transit network, and that all three scenarios result in modest to significant improvements in most performance measures when compared against the baseline scenario. The baseline scenario places the region at an aggressive starting point for comparison purposes, given the high level of transit investment included in the 2030 RTP. The overall concept was to test three varying strategies for expanding the role of transit in the region beyond that outlined in the current RTP.

In summary, the initial analysis shows that while none of the scenarios performs the best in all of the categories, the Many Centers scenario appears to have the highest overall performance, although it also requires the highest level of capital and operating cost support. That being said, the analysis shows that there are effective features in the Transit Propensity, Commuter Point-to-Point, and Many Centers alternatives that could be incorporated into a combined strategy. As a result, there appears to be an opportunity to combine the most effective features of all three scenarios into a “Hybrid” alternative that could then be further evaluated and refined as cost estimates and revenue assumptions become available. More detail on the “Hybrid” approach is contained in Item 3B of this report.

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3 All transit network alternatives hold the highway networks and land use assumptions constant. The highway network for each alternative consists of the highway network included in the 2030 RTP and the land use assumptions are those assumed in the 2050 Regional Growth Forecast.
Next Steps

Based on discussion today on both Items 3A and 3B of this report, staff will return to the Board of Directors in July with a report on the transit mode share performance for the geographic areas and with a refined list of transit projects for possible incorporation into the 2050 Unconstrained Transit Network.

GARY L. GALLEGOS
Executive Director

Attachments: 1. Transit Propensity Subway-Style Map
2. Commuter Point-to-Point Subway-Style Map
3. Many Centers Subway-Style Map
4. Draft Initial Transit Concepts
5. Study Area for Urban Area Transit Strategy
6. Sampling of Comments on the UATS from 2050 RTP Public Workshops
7. Peer Review Panel Biographies
8. Peer Review Panel Global Observations
9. Peer Review Panel Individual Perspectives
10. Executive Summary of Lessons Learned from Peer Regions Report
11. Major Travel Corridors and Areas for Use in Identifying Initial Transit Mode Share Goals
12. Proposed Transit Mode Share Goal Ranges for Identified Corridors and Areas
13. Peak-Period, Home-to-Work Transit Mode Share Maps
   a. 2008 Transit Mode Share
   b. 2030 RTP Transit Mode Share (with 2050 Land Uses)
   c. 2050 Proposed Transit Mode Share Goal Ranges
14. Initial Performance of Transit Network Alternatives

Key Staff Contacts: Carolina Gregor, (619) 699-1989, cgr@sandag.org
                   Dave Schumacher, (619) 699-6906, dsc@sandag.org

Funds are budgeted in Work Element #B1003
Transit Propensity

Expanding Transit in the Most Urbanized Areas

Legend
- High Speed Rail
- COASTER Rail
- Light Rail Transit
- Bus Rapid Transit
- Rapid Bus
- Streetcar/Shuttle-Circulator
- High Frequency Local Bus Services
Commuter Point-to-Point
Emphasizing Quick Access to Work

Legend
- High Speed Rail
- COASTER Rail
- Light Rail Transit
- Bus Rapid Transit
- Peak Bus Rapid Transit Commuter
- Rapid Bus
- Streetcar/Shuttle-Circulator
- High Frequency Local Bus Services
Many Centers

Connects Smart Growth Areas and Activity Centers

Legend
- High Speed Rail
- COASTER Rail
- Light Rail Transit
- Bus Rapid Transit
- Peak Bus Rapid Transit Commuter
- Rapid Bus
- Streetcar/Shuttle-Circulator
- High Frequency Local Bus Services
Draft Initial Transit Concepts

Transit Propensity:

*Expands Transit in the Most Urbanized Areas*

Builds on the San Diego region’s innovative trolley system—expands transit in the central core and in the region’s most urbanized areas, many of which are characterized by pre-World War II street grid patterns. Provides very frequent transit services, alleviating riders from schedules and allowing easy transfers. Major investments may include streetcars, grade separations, priority treatments, transit nodes, expanded light rail, enhanced bike and walk access, and improvements to the public realm.

Commuter Point-to-Point:

*Emphasizes Quick Access to Work*

Transit to work is an easy option—leverages new dedicated transit facilities and flexible use of Managed Lanes to serve work trips. A system of few transfers provides high speed, reliable commute options during peak periods with a variety of “last-mile” treatments. Major investments may include Managed Lanes with in-line stations, park and ride lots, new fixed guideways, and some rail expansion.

Many Centers:

*Connects Local Smart Growth Areas and Activity Centers*

Supports the San Diego region’s local commitments to smart growth—consists of a multi-radial transit system serving the region’s larger-scale smart growth areas and major activity centers. Transit services are oriented toward the centers, and supported with frequent connections between the centers. Major investments may include a variety of transit priority treatments between centers, expanded light rail, enhanced transit centers, shuttles and streetcars connecting to the transit centers, enhanced bike and walk access, and improvements to the urban realm.
Sampling of Comments on the Urban Area Transit Strategy from 2050 RTP Public Workshops

- Strong support for more bike projects, more bike racks on buses and trolleys, and related connections to transit stations;
- Suggestions on transit line extensions in particular areas (e.g., streetcar from Park Blvd. to I-805 along University Avenue; light rail to North County; streetcar along Monroe Avenue);
- Observation that places with great transit systems (e.g., London, Paris, Sydney, Moscow, San Francisco) have underground stations and lines;
- Support for extension of the planned high speed rail system to the international U.S./Mexico border;
- Support for building an extensive transit system (“build it and they will come” notion);
- Concern over the lack of funding for transit services and the related suggestion to be less ambitious in the transit planning process;
- Need for more real-time information at transit stations;
- Encouragement for the use of smaller buses to increase efficiency;
- Preference for the “Many Centers” alternative;
- Support for priority measures to bypass areas with traffic congestion and improve travel times;
- Concern about future mobility for seniors and the need to plan ahead to meet their needs for “aging in place;”
- Encouragement for expanding sidewalks and planting street trees to make walking and biking more pleasant, particularly at transit stations;
- Appreciation for the Spanish translation at the workshops.
John M. Inglish – General Manager/CEO, Utah Transit Authority (UTA)

John Inglish has worked in the transportation industry for more than 35 years. With an engineering background, Mr. Inglish began his career in 1970 as a systems planning engineer for the Utah State Highway Department. In the early 1970s he began working for the Wasatch Front Regional council on the early initiatives that formed today’s UTA. In 1977, he became the director of Transit Development for UTA, and in August 1997, the UTA Board of Trustees appointed Mr. Inglish as the general manager for the Authority. Under his leadership, UTA has garnered national and worldwide recognition for its transportation systems. He oversaw funding and construction of the $312.5 million Sandy to Salt Lake TRAX light rail line, completing the 15-mile TRAX line one year ahead of schedule and under budget, as well as the $118.5 million University TRAX light rail line connecting downtown Salt Lake City and the University of Utah in time for the 2002 Winter Olympics.

Martin Tuttle – Deputy Director, Planning and Modal Programs for the California Department of Transportation

Martin Tuttle has more than 25 years of top transportation and innovative land use planning management experience at the local, regional and state levels of government. As Deputy Director of Planning and Modal Programs at Caltrans, Mr. Tuttle is responsible for the Caltrans Divisions of Local Assistance, Mass Transportation, Planning, Rail, Aeronautics and Transportation System Information. As the executive director of the Sacramento Area Council of Governments (SACOG), he launched its nationally-recognized “Blueprint” transportation and land use growth plan. Mr. Tuttle also has served as the executive director of the Solano Transportation Authority (STA). As a top staff member to Assembly Majority Leader Tom Hannigan in the California State Legislature for 13 years, Mr. Tuttle managed innovative land-use and transportation reform legislation, including the bill establishing the successful Capitol Corridor intercity rail service between Sacramento and San Jose. Prior to joining Caltrans, he oversaw transit oriented development and urban infill housing projects for URS Corporation and New Faze Development.

George Hazel – Chairman, MRC McLean Hazel Ltd

George Hazel has extensive experience in all aspects of transport and communications, both urban and rural. He has specific expertise in strategic planning and policy development, the integration of transportation with other related areas, the prioritization of projects with respect to economic, environmental, and social objectives, and innovative funding of transportation infrastructure around the world. He has studied all forms of transportation policy around the world, including congestion charging and demand management, mode shift, goods movement, and growth management. Mr. Hazel has worked in the public, private, and academic sectors at a senior level and has acted as advisor to the Academy of Sustainable Communities, the Commission for Integrated Transport, Transport for London, the Queensland State Government, the Greater Toronto and Hamilton Region, the City of San Diego and many government agencies around the United Kingdom. Currently an honorary professor at the Robert Gordon University and adjunct professor at the Queensland University of Technology, Mr. Hazel has published a book on Making Cities Work and presents at conferences around the world.

Aidan Hughes – Principal, Arup

Aidan Hughes is the leader of Arup’s planning practice in the US, which focuses on integrated urbanism and sustainable planning and design. Mr. Hughes brings over 20 years experience and a proven track record in the management of complex multi-disciplinary projects. He consults to municipal governments, transportation agencies, and developers, and is currently leading the sustainable redevelopment of the Concord Naval Weapons Station in Concord, CA. A major part of the redevelopment program is compliance with California AB 32 (global warming act) and evaluating and mitigating carbon emissions from transportation, energy, and other sources for each redevelopment alternative. He also is involved in the Treasure Island Sustainability Planning project in San Francisco. Mr. Hughes is a USGBC LEED Accredited Professional, has worked in Europe, Asia and the United States, and has a broad understanding of the global approaches to delivering successful planning and infrastructure projects.
Peer Review Panel’s Global Observations

The Peer Review Panel convened in San Diego from April 19 – 21, 2010, to review and assess the work completed to date on the Urban Area Transit Strategy in relation to the preparation of the broader 2050 Regional Transportation Plan (RTP). In addition to the Panel’s comments on the three alternative transit networks summarized in the staff report, the Panel also made a number of more global observations, as follows.

- **Economic Competitiveness**: Transportation is seen as the major driver of regions’ economic competitiveness, and an increased focus on developing public transit systems is seen as a key factor in cities around the world for meeting mobility needs that ensure long-term economic sustainability.

- **Technological Savviness**: All over the world, technology is increasingly being used to market transportation options and other services to individuals based on user-preferences. Integrated electronic cards, such as the Octopus Card in Hong Kong and the Oyster Card in England, are providing tremendous potential to the private sector for marketing goods and services to end users; to the public sector for tailoring, directing, and providing incentives for transit/transportation services to end users; and for users who receive incentives and discounts for many kinds of products and services based on established purchasing choices. Global technology firms are actively seeking opportunities to develop markets. The Compass Card in the San Diego region is a solid start, and the region should proactively work to expand the Compass Card services beyond transportation to provide users with more convenience and incentives, and to maximize the region’s ability to direct future transportation marketing decisions.

- **World Class Region**: The San Diego region has true potential of becoming a world class region. The focus of the Urban Area Transit Strategy should shift from developing a “world class transit system” to developing a “transportation system that supports a world class region and its local communities.”

- **Sustainability and Co-Benefits**: In addition to pursuing transit as a means to help meet the Senate Bill 375 (SB 375) (Steinberg, 2008) regulatory mandates to reduce greenhouse gas emissions, transit also can help provide alternative transportation options, reduce foreign energy dependency, improve air quality, and reduce the proportion of American budgets spent on transportation. In addition, any co-benefits from smart growth development patterns and integrated transit systems should be highlighted and promoted, including internal trip capture, increased walking and biking, and carbon reductions in energy, waste, and water resulting from green building programs.

- **Land Use Development around Transit Stations**: Land use developers around the world recognize the economic potential for redevelopment around transit stations. Increasingly, the public sector is participating more directly with the private sector in the planning, design, and implementation of these types of redevelopment projects that result in more transit-oriented uses and direct economic benefits to the public sector that can then be invested back into transit infrastructure development. The Panel cited the proposed Tecolote Road, Clairemont Drive, and Balboa Avenue station sites along the Mid-Coast light-rail transit alignment as prime examples where such public/private partnerships could be forged. Additionally, the Panel
expressed concern over the proposed Genesee Avenue alignment in the University City area, where an elevated trackway and station are currently proposed in order to minimize impacts on auto traffic. The Panel felt that the added costs of grade-separation versus an at-grade alignment may not be justified given the benefit that would accrue to the overall transportation system with the addition of the Mid-Coast project. They emphasized the importance of having transit facilities at the ground level as a means to better integrate into the surrounding community rather than forcing a separation from vehicle traffic as a traditional method of addressing congestion.

- **Land Use, Freeways, and Parking**: Land use density, design, and mix are essential components of a successful urban fabric and transit system. Locations that have limited parking and freeway expansions, and have simultaneously added an array transit services, have increased the overall performance of their transit systems and have increased transit mode share. The Panel felt that SANDAG should more directly reward communities that currently have high land use densities near transit stations, and should more directly influence land development in areas that currently have regional transit services. In addition, the Panel encouraged SANDAG to work more directly with the development community to build higher-density projects at stations, and to evaluate the allocation of affordable housing through the Regional Housing Needs Assessment process. In addition, the Panel expressed concerns that the region’s Managed Lanes could be counterproductive toward transit if not properly implemented and operated, and suggested that SANDAG should monitor transit productivity as the Managed Lanes and Bus Rapid Transit (BRT) systems are implemented.

- **Project Prioritization**: The process to prioritize the funding of transportation projects needs to be easily understood by policymakers and the public, and needs to be conducted through a transparent process. A “policy audit table” example was provided. The audit helps to bridge the gap between the goals and objectives included in policy documents and the proposed transportation projects to help identify which transportation projects align with which policies, and alternatively which policies may not be addressed by any transportation projects.

- **Leadership and Champions**: Places that have successful transit systems have had strong leaders and champions to promote transit. Increasingly, bicycle and pedestrian advocates are supporting transit when they see opportunities for enhancements between the various modes. All successful transit systems need proactive and well-informed champions.

- **Dedicated Funding Sources**: Obtaining dedicated funding sources for transit is critical. In some cases, placing initiatives on the ballot solely for transit (versus for additional transportation modes and/or for other services) has culminated in success. (Within this context, the Panel recognized the difficulty of reaching California’s two-thirds voter approval threshold for new special taxes.) The Panel also noted the potential of exploring a subregional funding approach in San Diego as an innovative concept that should be pursued.
AIDAN HUGHES – PRINCIPAL, ARUP

Strengths
1. SANDAG has a strong relationship with the two transit operators and has good relationships with the Cities. This allows you to establish bold visions and work together to deliver on the vision. A more fractured relationship can get mired in delay and compromise.
2. SANDAG and the two operators have a very capable and experienced staff complemented with strong and committed leadership at the political and executive level. This translates into an ambition for leadership – learning from global best practice and seeking innovation in delivery and operation.
3. The existing system is operating successfully with strong farebox recovery and good coverage in the core areas. Much of the backbone system is in place through the LRT, Coaster and Sprinter systems linked into regional and international transport networks. While from the “inside” there is a recognition of some of the operational difficulties (for example, operating the trolley in the downtown), the public perception appears to be very positive. This establishes a strong platform for getting acceptance of system expansion and support for raising new capital. This also brings a responsibility to continue to deliver high quality service with clear benefits for riders as new projects are delivered.

Weaknesses
1. The Smart Growth plan is valuable as a comprehensive tool and it is being used appropriately as the basis for the transit networks. However, it is a bottom-up plan (the best the Cities are prepared to do right now) and it is not directly related to the availability of transit. There is an opportunity for SANDAG to take a lead in punching up the Smart Growth plan by using the carrot of transit investment to encourage Smart(er) Growth. Where there are proposed transit investments, they should be directly linked to some “threshold” metrics for smart growth.
2. The discussion we had around elevated light rail was interesting. It points to a fundamental issue that will face all projects, namely whether a case can (or should) be made to give transit priority in terms of road space at the expense of the auto. A greater commitment should be made to support trade-offs in favor of transit – case studies around the nation and world have demonstrated that this can be achieved with little downside. The upside is an ability to increase ridership, demonstrate the benefits of transit and make more complete communities with transit at its core. In many ways, this philosophical change in emphasis will be the platform for the world class community vision.
3. As we noted “parking is a big issue” and it is interesting that you have experience of the negative consequences in relation to parking for the downtown ballpark. We didn’t have time to address parking in all its complexities as part of the peer review, but parking policies should be dealt with as essential complementary measures to support successful transit.

GEORGE HAZEL – CHAIRMAN, MRC MCLEAN HAZEL LTD

Strengths
1. Enthusiasm, understanding, and competence of the team.
2. History of what you’ve done to date to build on.
3. In general, an exciting plan to deliver in a potentially world class city – you’re not there yet!

Weaknesses
1. Attitudes to not inconveniencing cars - unless you sort this out and the leadership backs and understands that it is the city’s and the car drivers’ best interests to have a world class transit system and give it top priority and road space, then you will find it very difficult. Discussion on elevated section of Mid-Coast is a key example.
2. Governance needs to be sorted - too many agencies saying different things and doing different things.
3. I worry about managed lanes as a transit policy, specifically that they could be counterproductive toward the performance of transit. I would suggest experimenting with peak time express transit service or local off-peak service and monitor the results.

In addition you should really look at the potential of Intelligent Commuting Technology (ICT) and the Transport Retail Model, building on the Compass Card you have, and also the potential regarding capturing increased land value to fund transit.
Urban Area Transit Strategy:
A Component of the 2050 Regional Transportation Plan

Lessons Learned from Peer Regions
December 2009

EXECUTIVE SUMMARY

Prepared by:

Parsons Brinckerhoff
EXECUTIVE SUMMARY

With the preparation of the 2050 Regional Transportation Plan (RTP), the San Diego Association of Governments (SANDAG) is seeking a new and innovative vision for transit that will result in a more significant role for transit in addressing the region’s mobility, land use, and sustainability goals. To help guide development of a new transit strategy, a review has been conducted of other regions that have successful transit systems, relatively high levels of transit use, and unique transit services or facilities. These areas offer examples of how transit has been applied successfully, and provide a point of reference or a standard from which comparisons can be made.

Three regions that might be considered “benchmark” cities for San Diego were researched in some detail. These cities are:

- Portland, Oregon
- Sydney, Australia
- Vancouver BC, Canada

Seven additional “comparison cities” are highlighted because they have characteristics similar to San Diego or provide examples of unique transit applications that have helped raise the profile of transit in their regions. These cities are:

- Brisbane, Australia
- Bordeaux, France
- Denver, Colorado
- Los Angeles, California
- Melbourne, Australia
- Minneapolis, Minnesota
- Seattle, Washington

Appendix A contains comparative data for U.S. cities to help provide a point of reference for San Diego.

Overarching Themes and Considerations for San Diego

Several overarching themes emerged from the benchmark and comparison cities evaluation, many of which may be appropriate for consideration as SANDAG develops the 2050 Transit Strategy. The overarching themes found as part of the case study review are presented on the left side of the following table and their potential applicability to San Diego is presented on the right.
## Overarching Theme

### The “success” of transit did not happen overnight.

Successful transit has been an evolutionary process in case study regions during which certain strategies were used until their usefulness was outlived, and then the strategies were modified or new strategies were implemented.

### Transit success depends on regional plans and visions that guide the integration of land use and transportation.

Many regional plans create a hierarchy of centers focused around transit that provide good design, sufficient density, and a land use mix that supports non-auto access to transit. Success is also dependent on a number of agencies working collaboratively to achieve the success of the regional plans and visions.

### Considerations for San Diego

San Diego embarked on an innovative new transit strategy in the early 1980s with the opening of the region’s (and nation’s) first urban rail transit line since WWII from downtown San Diego to the International Border. Over the next 25 years, the region expanded the rail network to provide a backbone transit infrastructure and service network, to one that now includes 75 miles of light rail (San Diego Trolley and Sprinter) and 40 miles of commuter rail (Coaster). Between 1975 and 2005, transit ridership increased 150 percent while regional population increased approximately 75 percent. As the original regional rail program nears completion (the 11-mile Mid-Coast corridor between Old Town and University City is the only remaining rail extension in the Regional Transportation Plan), the regional transit strategy has shifted to a multi-modal, shared right-of-way approach (transit on managed lanes and arterial streets). Looking to the experiences of the case study regions, San Diego may need to develop a new “dramatic strategy” for transit for the next 30-40 years – one that combines past, present, and future strategies to recapture the transit momentum experienced in the 1980s. The new strategy will need to include a stronger connection between transit investment and land use policies to achieve SANDAG’s vision for a larger transit mode share in the urban core, and key corridors and communities.

SANDAG’s Regional Comprehensive Plan and Smart Growth strategy have established a hierarchy of centers that are designed to be supported by transit, as well as policies for integrating land use and transportation. Development of a new regional transit strategy should draw heavily on the policies and goals in the Regional Comprehensive Plan for both the region and specific corridors/communities. To achieve success, agencies, transit providers, and stakeholders must work together towards agreed upon transit and land-use goals.
<table>
<thead>
<tr>
<th>Overarching Theme</th>
<th>Considerations for San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regions use a variety of tools to achieve transit success.</strong></td>
<td>SANDAG and the region already have a variety of policy tools to support transit as defined in the Regional Comprehensive Plan and Smart Growth strategy. Additional policies and tools found in the peer regions/cities that promote and support existing and future transit services for consideration by SANDAG include: improvements to the pedestrian environment, urban growth boundaries, cooperative agreements between public agencies and private developers, tax incentives to foster transit oriented development, parking maximums or limitations, and legislation requiring commute trip reductions by major employers.</td>
</tr>
<tr>
<td><strong>Regions generally experienced a shift in policy and investment toward transit over the past few decades.</strong></td>
<td>The San Diego region is also experiencing similar pressures to contain sprawl, protect the environment, promote livable communities, and maintain and improve the quality of life. Through the Regional Comprehensive Plan, the San Diego region has made the policy connection between investments in transit and achieving these goals. Looking toward the future, new transit policies and strategies designed to increase transit mode share will need to understand the effects of regional highway investments and policies on the potential success of the transit investments and system.</td>
</tr>
<tr>
<td><strong>Local bus networks are essential for successful transit systems to provide efficient connections and access to the backbone system.</strong></td>
<td>San Diego's existing transit network leans toward hub-and-spoke structure with feeder buses connecting to rail based transit centers. However, many trips rely solely on bus transit. A new transit strategy will need to build off the existing rail transit investment, while also considering how best to serve key travel markets (origins/destinations, work trips, etc.) that may not be well served by existing bus/rail connections. The strategy will also need to define the role of local and feeder bus service in relation to the major transit infrastructure investments.</td>
</tr>
</tbody>
</table>

Local bus networks are essential for successful transit systems to provide efficient connections and access to the backbone system.

To efficiently support higher frequency transit stations, feeder services are essential components of the transit system and, depending on the local geography, are often structured along grids or hub-and-spoke networks.
<table>
<thead>
<tr>
<th>Overarching Theme</th>
<th>Considerations for San Diego</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Parking requirements in transit-supportive communities are reduced.</em></td>
<td></td>
</tr>
<tr>
<td>Most transit successful regions have coordinated parking policy with land use and transit policy. Parking strategies often differ between central and outlying areas.</td>
<td>Abundant and inexpensive parking have proven to be key deterrents to transit use. A new transit strategy for the San Diego region should evaluate how parking policies (location, availability, and cost), particularly in the city center and urban core, impact transit use.</td>
</tr>
<tr>
<td><em>Successful transit systems include a variety of transit modes.</em></td>
<td></td>
</tr>
<tr>
<td>Cities and regions with successful transit have systems that include combinations of transit modes applied for the particular conditions, objectives and circumstances (i.e., heavy rail, commuter rail, light rail, bus rapid transit, rapid bus, local bus, streetcar, shuttles, electric bus, etc.)</td>
<td>All regions include a combination of transit facility and service applications to create their transit networks and systems.</td>
</tr>
<tr>
<td><em>Unique applications of transit have occurred in the central cities.</em></td>
<td></td>
</tr>
<tr>
<td>While all of the studied regions have a wide range of transit modes that provide area- and location-appropriate transit, these cities have also incorporated special applications of transit infrastructure, services, and policies in their downtowns in ways that raise the profile of transit, promote transit use, and support higher density environments.</td>
<td>Even cities with similar transit histories and land use characteristics as San Diego have invested heavily in innovative transit facilities and services in their central cities (transit malls, streetcars, underground bus terminals, fare free zones). These investments have proven highly successful in generating transit ridership, supporting the regional transit network, achieving land use objectives, increasing transit mode share, and contributing to the vitality of their downtown core. Many of these strategies may have applicability to downtown San Diego and other key activity centers.</td>
</tr>
</tbody>
</table>
Major Travel Corridors and Areas for Use in Identifying Initial Mode Share Goals

- Major Travel Corridor
- Major Employment Area
- High Activity Area
### Peak-Period, Home-to-Work Transit Mode Share

<table>
<thead>
<tr>
<th>Identified Corridors/Areas</th>
<th>Baseline Data</th>
<th>Supporting Data</th>
<th>Proposed Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008 Existing Transit</td>
<td>2030 RTP With 2050 Land Uses²</td>
<td>25% Increase Over 2030 RTP</td>
</tr>
<tr>
<td>Major Employment Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Downtown San Diego</td>
<td>24%</td>
<td>25%</td>
<td>31%</td>
</tr>
<tr>
<td>University City</td>
<td>3%</td>
<td>13%</td>
<td>16%</td>
</tr>
<tr>
<td>Sorrento Mesa</td>
<td>2%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Kearny Mesa</td>
<td>3%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Otay Mesa/Otay Ranch</td>
<td>3%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Palomar Airport</td>
<td>2%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>High Activity Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Core</td>
<td>12%</td>
<td>16%</td>
<td>20%</td>
</tr>
<tr>
<td>Oceanside/Escondido Corridor</td>
<td>3%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Other Urbanized Areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North I-15 Corridor</td>
<td>1%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>North Central Coastal Area</td>
<td>2%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Central Coastal Area</td>
<td>5%</td>
<td>10%</td>
<td>13%</td>
</tr>
<tr>
<td>Coastal South Bay</td>
<td>8%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>East County/El Cajon</td>
<td>4%</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>East County/Santee</td>
<td>3%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Urban Area Transit Strategy Study Area</td>
<td>5%</td>
<td>9%</td>
<td>11%</td>
</tr>
</tbody>
</table>

¹ Values represent peak period home-to-work trip transit mode-share for destination districts.
² Values reflect projected mode share of either the currently adopted 2030 Reasonably Expected RTP or the 2030 Unconstrained RTP, whichever is higher, combined with 2050 land uses.
2008 Transit Mode Share

Values represent peak period home-to-work transit mode share for destination districts.
2030 RTP Transit Mode Share (with 2050 Land Uses)

Mode Share (%)
- Under 5%
- 5% to 9%
- 10% to 14%
- 15% to 19%
- 20% to 24%
- 25% to 29%

Values represent peak period home-to-work transit mode share for destination districts.
2050 Proposed Transit Mode Share Goal Ranges

Values represent peak period home-to-work transit mode share for destination districts.
Urban Area Transit Strategy - Initial Performance of Transit Network Alternatives

Key: ● Most Effective  ○ Middle  □ Least Effective  □ No Significant Change

A. Mode Share

<table>
<thead>
<tr>
<th>Mode Share Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
<th>Commuter Point-to-Point</th>
<th>Many Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Peak-Period Transit Mode Share as Applied to the Identified Corridors/Areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2. All-Day Transit Mode Share as Applied to the Identified Corridors/Areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3. Change in Peak Period Urban Area Transit Mode Share</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Transit Ridership

<table>
<thead>
<tr>
<th>Ridership Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
<th>Commuter Point-to-Point</th>
<th>Many Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Change in Transit Person Trips (Regional)</td>
<td>202,000</td>
<td>401,000</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>B2. Change in Transit Passenger Miles (Regional)</td>
<td>1,593,000</td>
<td>5,197,000</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>B3. Change in Transit Peak-Period Person Trips (Regional)</td>
<td>79,000</td>
<td>178,000</td>
<td>○</td>
<td>○</td>
<td>●</td>
</tr>
<tr>
<td>B4. Change in Mode of Access to Transit (Non-Motorized and Auto)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk/Bike to Transit</td>
<td>85.4%</td>
<td>89.8%</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Auto (drove and driven) to Transit</td>
<td>14.6%</td>
<td>10.2%</td>
<td>●</td>
<td>○</td>
<td>●</td>
</tr>
</tbody>
</table>

C. Cost-Effectiveness

<table>
<thead>
<tr>
<th>Cost-Effectiveness Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
<th>Commuter Point-to-Point</th>
<th>Many Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. Rough Order of Magnitude (ROM) Capital Cost Estimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2. Cost-Effectiveness of Network (Region)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3. Operating Subsidy Required (Region)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4. Total Transit System Capital Cost vs. SANDAG Revenue-Constrained Funding Scenario</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C5. Ability to Phase Major System Components/Elements</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

D. Efficient Transportation Network

<table>
<thead>
<tr>
<th>Efficiency Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
<th>Commuter Point-to-Point</th>
<th>Many Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit System Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D1. Passenger Miles to Transit Seat Mile Ratio</td>
<td>36%</td>
<td>47%</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Regional Transportation System Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D2. Change in Auto Vehicle Miles Traveled (VMT) per capita</td>
<td>26.9</td>
<td>26.9</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>D3. Change in Auto Vehicle Hours Traveled (VHT) per capita</td>
<td>0.7</td>
<td>0.8</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>D4. Change in Auto Vehicle Trips per capita</td>
<td>3.6</td>
<td>3.5</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

1 Baseline scenario consists of an overlay between the highway and transit networks included in the 2030 RTP and the land use assumptions included in the 2050 Regional Growth Forecast.
### E. Sustainability

<table>
<thead>
<tr>
<th>Sustainability Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
<th>Commuter Point-to-Point</th>
<th>Many Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greenhouse Gas Reduction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1. Estimated Change in GHG (tentative)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2. Peak-Period Non-Motorized Mode Share in Urban Area</td>
<td>3.7%</td>
<td>3.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3. All-Day Non-Motorized Mode Share in Urban Area</td>
<td>3.4%</td>
<td>3.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E4. Compatibility with Regional Bike Plan (mi. of bike fac. within 1/2 mile of major station)</td>
<td>73</td>
<td>146</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land-Use/Transportation Connection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E5a. % of Jobs within 1/2 Mile of Major Transit Stations</td>
<td>21.1%</td>
<td>38.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E5b. % of Jobs within 1/4 Mile of Major Transit Stations</td>
<td>10.7%</td>
<td>21.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6a. % of Housing Units within 1/2 Mile of Major Transit Stations</td>
<td>9.4%</td>
<td>31.2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6b. % of Housing Units w/in 1/2 Mile of Major Transit Stations with 10 Minute or Better Service</td>
<td>0.0%</td>
<td>23.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E6c. % of Housing Units w/in 1/2 Mile of Major Transit Stations with 15 Minute or Better Service</td>
<td>7.3%</td>
<td>30.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E7. Compatibility with current Regional Activity Centers (Hospitals, Universities/Colleges, Shopping Malls, and Tourist Attractions within 1/2 Mile of Major Transit Stations)</td>
<td>17</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### F. Social Equity/Environmental Justice

<table>
<thead>
<tr>
<th>Social Equity/Environmental Justice Measures</th>
<th>2008 Existing</th>
<th>Baseline</th>
<th>Transit Propensity</th>
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<td>F1a. % Minority Populations within 1/2 Mile of Major Transit Stations (% Improvement)</td>
<td>11.2%</td>
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<td>F1b. % Non-Minority Populations within 1/2 Mile of Major Transit Stations (% Improvement)</td>
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<td>F1c. % Low-Income Households within 1/2 Mile of Major Transit Stations (% Improvement)</td>
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<td>F1d. % Non-Low-Income Households within 1/2 Mile of Major Transit Stations (% Improvement)</td>
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<td><strong>Other Meaningful Social Equity/Environmental Justice Measures</strong></td>
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<tr>
<td>F2a. % of 75+ Population within 1/4 Mile of Major Transit Stations</td>
<td>3.0%</td>
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<td>F2b. % of 75+ Population within 1/4 Mile of All Stations</td>
<td>54.8%</td>
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<tr>
<td>F3. % Zero-Car Households within 1/2 Mile of Major Transit Stations (2000 census data)</td>
<td>16.7%</td>
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2 Title VI requires analysis of the burdens of regional transportation system investments on low-income and minority populations. Measures in this category evaluate the comparative percent improvement between low-income and non-low-income populations and minority and non-minority populations.

Key: A "1" indicates disparate impact and a "2" indicates no disparate impact.
## Urban Area Transit Strategy - Initial Performance of Transit Network Alternatives

### G. Time-Competitiveness

<table>
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<tr>
<th>Time Competitiveness Measures</th>
<th>2008 Existing</th>
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<td><strong>G7. El Cajon - Sorrento Valley Travel Times (in Minutes)</strong></td>
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2050 REGIONAL TRANSPORTATION PLAN: DEVELOPMENT OF THE INITIAL UNCONSTRAINED TRANSPORTATION NETWORK

Introduction

During April and May, staff presented the Urban Area Transit Strategy alternative transit networks to the Transportation and Regional Planning Committees, various SANDAG working groups, and at the 2050 Regional Transportation Plan (RTP) public workshops for public input. The networks also were reviewed by an outside Peer Review Panel. Based on feedback received so far, staff has assembled initial recommendations for a preferred 2050 transit network based on the initial three alternatives evaluated as part of the Urban Area Transit Strategy. This transit network, highway improvements, and other management strategies form the basis for the initial 2050 Unconstrained Transportation Network.

Board members are asked to discuss and provide feedback on the initial Unconstrained Transportation Network. Recommendations for a preferred Unconstrained Transportation Network will be presented at the July 2010 Board meeting for further discussion and use in the development of the Draft 2050 RTP.

2050 RTP Transportation Network Scenarios

In developing the 2050 RTP, the Unconstrained Transportation Network represents the region’s vision for reasonable transit, highway, and arterial improvements and operations to meet travel demand in 2050. Defining the Unconstrained Network is an important step in developing an updated RTP, because it establishes the broadest multimodal network from which revenue constrained network scenarios will be developed.

Once the Unconstrained Network is defined, staff will prioritize all of the future projects in this network, using the updated transportation project evaluation criteria (see Agenda Item No. 4). Based on revenue projections, various Revenue Constrained transportation network scenarios will be developed using this prioritized project list and other factors. The Revenue Constrained network scenarios will attempt to build and operate as much of the Unconstrained Network as possible, given revenue availability and flexibility, and project priorities. These scenarios will be evaluated using performance measures leading to the eventual selection of a preferred Revenue Constrained Network by the Board of Directors.

As previously discussed with the Board, Senate Bill 375 (Steinberg, 2008) (SB 375) requires that the 2050 RTP include a Sustainable Communities Strategy (SCS) as a new element, in addition to the traditional policy, action, and financial elements. The 2010 Regional Transportation Plan Guidelines adopted by the California Transportation Commission on April 7, 2010, establish that the RTP must
be an “internally consistent” document (i.e., all four elements of the RTP must be consistent with one another). As a result, transportation investments and the forecasted development pattern in the SCS should be complementary and not contradictory.

Federal regulations require that the RTP be financially constrained and include a financial plan that demonstrates how the adopted transportation plan can be implemented [Title 23 CFR Part 450.322(f)(10)]. The financial plan must demonstrate that projects included in the RTP can be implemented using committed, available, or reasonably available revenue sources (Title 23 CFR Part 450.104). Therefore, to achieve consistency among all RTP elements, the SCS must be developed to match the financially (or revenue) constrained plan. The 2050 RTP Environmental Impact Report (EIR) will analyze the Revenue Constrained plan as the Proposed Project. Project alternatives also will be analyzed in the EIR.

Discussion

Initial Recommendations for a 2050 Unconstrained Transit Network

The Urban Area Transit Strategy will serve as the basis for development of the regional transit network to be included in the 2050 RTP. Through the planning process, staff has developed and begun testing three transit network alternatives with a focus on the urban areas of the San Diego region with the ultimate goal of incorporating one of the networks (or a combination or variation of the networks) into the 2050 RTP Unconstrained Network. The Urban Area is illustrated in Attachment 1.

As discussed in Agenda Item No. 3A, the transit alternatives under study were grouped into three themes: Transit Propensity” (expanding transit in the most urbanized areas); “Commuter Point-to-Point” (emphasizing quick access to work); and “Many Centers” (connecting local smart growth areas and activity centers).

Based on feedback from the 2050 RTP public workshops, the Peer Review Panel, the performance analysis, and the public, staff recommends combining the best overall transit system strategies contained in all three alternatives as the focus for developing and testing a preferred RTP unconstrained transit network. This strategy focuses on developing a strong link between transit and transit-supportive land use patterns, a link that will ensure that future investments made in transit are maximized in terms of cost-effectiveness. Based on this approach, staff recommends developing a Hybrid strategy based on the following key points:

- Improve the current transit network in communities that already have strong transit/land use integration (e.g., Mid-City, coastal South Bay communities, etc.). Improvements would focus on establishing 10-minute, all-day frequencies on most local routes, developing Rapid Bus services along major arterial corridors, and adding new light rail service to better serve high-demand corridors. Streetcar and/or other shuttle/circulator services also would help improve intra-community circulation within smart growth centers (e.g., downtown San Diego, downtown Escondido, downtown El Cajon, etc.). This strategy would incorporate much of Transit Propensity alternative.

- Expand high-frequency local and Rapid Bus services into the largest-scale smart-growth areas that are emerging or planned in the near-term as suggested by the Many Centers alternative. These concentrations of future transit-friendly land uses help justify significant investments in transit infrastructure and services.
• Interconnect the existing, most highly-urbanized areas and future smart growth centers to major employment areas with a system of high-speed, high-frequency rail and Bus Rapid Transit lines that will facilitate easy and convenient access across the region. Using findings from the evaluation of the Commuter Point-to-Point alternative, the addition of selected peak commuter bus services that offer one-seat rides/competitive travel would facilitate access to key regional employment centers.

• Emphasize improvements to the pedestrian environment in and around rail and bus station areas to maximize convenient and safe walking access to transit, and also create interconnections between transit and the Regional Bike Plan as a means to facilitate access to transit stations from areas outside a walking distance and create new last-mile solutions.

These actions, taken together, could serve as a good starting point for the overall strategy for developing the long-range vision for the transit plan that will ultimately be incorporated into the 2050 RTP. The Transportation and Regional Planning Committees are discussing the proposed “Hybrid” approach at their joint meeting on June 4, 2010, and any comments made will be provided verbally at the June 11 Board Policy meeting. A draft list of transit projects for the 2050 Hybrid Unconstrained Transit Network is included as Attachment 2a. (Attachment 2b provides definitions of transit services and facilities for the Urban Area Transit Strategy for reference purposes.)

**Initial Recommendations for a 2050 Unconstrained Highway Network**

Similarly to the process being proposed for the transit network, SANDAG and Caltrans staffs are analyzing potential modifications to the 2030 RTP Unconstrained highway network. These modifications are based on supporting proposed transit investments in key corridors and communities while providing an adequate level of service for the overall transportation system. It is important to note that the 2030 RTP Unconstrained highway network includes an extensive Managed Lanes system that provides tremendous flexibility in serving transit and high occupancy vehicles (HOVs) by maximizing the available rights-of-way in several of the region’s major highway corridors. The goal in reviewing the highway network is to build upon this existing plan by integrating the revised transit network into it, thereby creating the most efficient and balanced transportation system.

Potential modifications include additional operational improvements to relieve bottlenecks, refinements of the HOV and Managed Lane network to support transit services, and adjustments to general purpose lane widening beyond what is included in the 2030 Reasonably Expected RTP for corridors that are projected to operate at acceptable levels of service. A map of the initial 2050 Unconstrained Highway Network is included as Attachment 3.
Next Steps

Based on discussion today, the initial Unconstrained Transportation Network will be presented to the working groups for discussion and feedback. Recommendations for a preferred Unconstrained Transportation Network will be presented at the July 2010 Board meeting for further discussion and use in the development of the Draft 2050 RTP.

GARY L. GALLEGOS
Executive Director

Attachments: 1. Study Area for Urban Area Transit Strategy
2a. Initial List of Transit Projects for the 2050 Hybrid Unconstrained Transit Network
2b. Definitions of Transit Services and Facilities for Urban Area Transit Strategy
3. Map of Initial 2050 Unconstrained Highway Network

Key Staff Contacts: Carolina Gregor, (619) 699-1989, cgr@sandag.org
Dave Schumacher, (619) 699-6906, dsc@sandag.org
Heather Werdick, (619) 699-6967, hwe@sandag.org

Funds are budgeted in Work Elements #31003 and 31005
Initial List of Transit Projects for the 2050 Hybrid Unconstrained Transit Network

An initial list of transit projects to be included in the 2050 Hybrid Unconstrained Transit Network is proposed below. (Definitions of transit services are included in Attachment 2b as a reference.) This initial list builds upon transit services currently in operation today and on planned transit services currently included in the 2030 Reasonably Expected Regional Transportation Plan (RTP).

Based on results of upcoming model runs to test the performance of these transit projects, staff will propose modifications to the mix of projects and adjustments to the levels of service in order to maximize the cost-effectiveness for the unconstrained transit network that will eventually be incorporated into the 2050 Regional Transportation Plan.

Ultimately, the selected transit network will be accompanied by a series of policy recommendations that may enhance the performance of the networks. The policy recommendations may address issues such as urban design, parking, street connectivity, bike and pedestrian access, transit awareness and education, last mile solutions, etc. During the planning process, staff will conduct a series of sensitivity tests that may provide supplemental information on the effectiveness of any potential policies that could be considered in the planning process.

Local Bus Services

Within the Urban Area Transit Strategy study area, service frequencies on most existing local bus services would be increased to 10 minutes or better throughout the day to serve short-distance trip-making and provide connections to regional Rapid Bus, Bus Rapid Transit, and Rail services. Additional local bus services within the study area would include:

- Solana Beach-Carmel Valley-University City
- Carmel Valley-Pacific Highlands Ranch-Sabre Springs
- Mira Mesa-Scripps Ranch North-South Poway Industrial Park

Outside the study area, a basic level of local bus service (30-60 minute service throughout most of the day) would be provided to connect key communities to the urban areas, including:

- Fallbrook
- Valley Center
- Ramona
- Alpine
- Tribal nations

Rapid Bus Services

A network of limited-stop Rapid Bus services would operate in key travel corridors as overlay services to local bus services to serve medium-distance trip-making, including:

- Oceanside-University City via Coast Highway corridor
- Oceanside-Vista via Mission Avenue corridor
- Camp Pendleton-Mira Costa College-Plaza Camino Real
• Escondido-South Escondido
• Carlsbad-San Marcos via Palomar Airport Road corridor
• Old Town-Pacific Beach-La Jolla-University City
• Mission Valley-University City via Genesee Avenue corridor
• Ocean Beach-Old Town-Mid-City-La Mesa
• Point Loma-Old Town-Linda Vista-Kearny Mesa
• SDSU-Downtown via Adams Ave/First Avenue corridors
• North Park-South Park-Golden Hill-Downtown
• Downtown-Coronado
• Downtown-Southeastern communities-Spring Valley
• SDSU-Mid-City-Lemon Grove-Spring Valley
• SDSU-Mid-City-Southeastern communities-National City
• Chula Vista-Southwestern College-Otay Ranch
• Imperial Beach-Otay-Otay Mesa

**Bus Rapid Transit Services**

All day bus rapid transit services would operate in key freeway/transit guideway corridors to serve long-distance regional tripmaking, including:

- Escondido-North I-15 communities, Kearny Mesa, Mission Valley, Downtown
- Otay Mesa-Otay Ranch-Chula Vista-National City-Downtown
- San Ysidro-Chula Vista-National City-Downtown-Old Town-University City

Peak-period commuter bus services would operate in key freeway/transitway corridors to provide point-to-point connections/one-seat ride service between key residential areas and regional employment centers, including:

- Escondido and north I-15 communities to Downtown
- Oceanside-Carlsbad-Encinitas to Sorrento Mesa
- Otay Ranch-Chula Vista to University City/Sorrento Mesa
- Southeastern San Diego communities-Mid-City to University City/Sorrento Mesa
- El Cajon-Santee to Kearny Mesa/University City/Sorrento Mesa
- Santee-El Cajon-Spring Valley to Eastern Urban Center/Otay Mesa
- Inland South Bay-Southeastern San Diego communities/Mid-City to Escondido/Palomar Airport Road corridor

**Commuter and Light Rail Services**

Double tracking of the COASTER would allow 15 minute peak/60 minute off-peak bi-directional service, while double tracking the Sprinter corridor would allow 10 minute all day service, along with express/limited stop service between Oceanside and Escondido.

A commuter rail overlay service on the proposed California High Speed Rail system would facilitate commuter travel needs between the Temecula-Escondido I-15 corridor and south county job centers.
Additional light rail services would operate in the following corridors:

- University City-Mira Mesa via Mira Mesa Boulevard
- University City-Kearny Mesa-Mission Valley-Mid-City-Southeastern San Diego communities-National City-Chula Vista via I-805 and I-15
- Downtown-SDSU via Park Blvd/El Cajon Boulevard
- Pacific Beach-Kearny Mesa-Mission Valley-SDSU-El Cajon via Balboa Avenue/Green Line

**Streetcar/Shuttle-Circulator Services**

Several streetcar and/or bus shuttle/circulator services would operate in key community center areas to facilitate both intra-area tripmaking and first-last mile connections to regional transit services.

- Downtown areas in San Diego, Oceanside, Escondido, El Cajon, National City, Chula Vista
- Community centers in University City/Sorrento Mesa, Kearny Mesa, Mission Valley, Hillcrest/North Park, Eastern Urban Center (Chula Vista)
## Definitions of Transit Services and Facilities
### For Urban Area Transit Strategy

### High-Speed Rail:

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<tr>
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<tr>
<td><img src="image" alt="California High-Speed Rail" /></td>
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Designed for very high-speed long-distance intercity trips with long station spacing and dedicated grade-separated lines. Examples include the Shinkansen in Japan, the TGV in France, and the AVE in Spain. California High-Speed Rail (HSR) is currently being planned from Sacramento to San Diego.

- Vehicles are steel wheel on steel track electrically-powered bidirectional train sets.
- Top Speed: 220 miles per hour (mph), but 150 mph maximum expected from San Diego to Escondido and 200 mph maximum from Escondido to Riverside.
- Level boarding.
- Passenger Capacity: Not yet determined in CA. Examples from around the world range from approximately 300 to 1,300 per train but most single level trains have about 400-500.
- Operates on dedicated high speed track with no at-grade crossings.
- California HSR system will be over 600 miles.

### Commuter Rail:

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<thead>
<tr>
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<tr>
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</tr>
<tr>
<td><img src="image" alt="Southern California MetroLink" /></td>
<td>Southern California MetroLink</td>
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Designed for higher-speed, longer-distance regional trips with stations spacing every four to five miles on average. Examples include the San Diego COASTER, Dallas/Fort Worth Trinity Railway Express, and Southern California Metrolink.

- Commuter rail lines use diesel or electric locomotives (diesel are more common and are used in Southern California).
- Typical speed: 80 mph.
- Typically low floor.
- Supported by Park and Ride lots.
- Typical passenger capacity: 130 seats per car operating with 3-8 car trains (typically no standees).
- Operates on a dedicated right-of-way separate from other vehicles.
- Typical length of line: 25-100 miles.
Light Rail Transit (LRT):

- Designed for medium-distance trips with station spacing about every mile on average. Examples include the San Diego Trolley, the San Diego SPRINTER, Portland MAX, Minneapolis Hiawatha Line, and Houston MetroRail.
- Electric or diesel-powered rail vehicles.
- Typical speed: corridor speed limit, generally not exceeding 55 mph.
- Designed for high-capacity corridors.
- Integrates well with street traffic, signals, and pedestrians.
- Operates on a dedicated guideway within separate right-of-way or on-street.
- Typical passenger capacity: 60-140 seated plus standees (per car), with 1-4 cars.
- Typical length of line: 6-25 miles.
- Typically low floor.

Streetcar/Shuttle-Circulator:

- Designed for short-distance trips with station spacing every few blocks or every quarter-mile on average. Streetcar examples include Portland Modern Streetcar, Seattle Streetcar, and San Francisco Historic Streetcar. Shuttle-circulators include MTS Shuttle, University City SuperLoop.
- Typical speed: speeds up to the speed limit of the street they operate on, generally averaging 12 mph (with stops).
- Designed for dense urban areas, such as downtown areas.
- Integrates well with street traffic, signals, and pedestrians.
- Streetcars operate either in mixed-traffic with automobiles or on a dedicated right-of-way.
- Typical passenger capacity for streetcars: up to 100 seated and standees per car (vehicles generally provide few seats due to short distance nature of trips). Operate as single vehicles.
- Typical passenger capacity for shuttles-circulators: up to 20-25 seated, depending upon vehicle size.
- Typical length of line: 2-6 miles.
Bus Rapid Transit (BRT):

- Designed for longer-distance, higher-speed, regional trip-making on a dedicated bus guideway or freeway Managed Lanes/High-Occupancy Vehicle (HOV) facilities. All-day, all-stop trunk BRT services can be complemented with peak-period commuter express services designed to provide very limited stop connections to major employment centers. Examples include San Diego Interstate 15 BRT, Los Angeles Orange Line, Eugene, Oregon EmX, and the Brisbane South-East Busway.

- Diesel or CNG/alternative fuels standard.
- Typical speed: corridor speed limit, typically 40-60 mph on average.
- Supported by Park and Ride lots.
- Designed for high-capacity corridors.
- Low floor design.
- Operates on dedicated guideway and sometimes in mixed-traffic with automobiles.
- Typical passenger capacity: 50-60 seated plus standees on arterial routes, 50-80 seated on freeway routes (per bus).
- Typical length of line: 8-15 miles on arterial segments, 10-30 miles on freeway segments.
- Typical station spacing: 0.5-1 mile on arterial segments, 4-5 miles on freeway segments.

Continued on next page...
Rapid Bus:

Provides higher-speed alternatives to local bus services in high volume arterial corridors and utilizes a range of lower-capital cost signal priority treatments, short segments of transit-only lanes, and limited station stops to achieve faster travel times. Rapid Bus services can be upgraded to BRT over time through implementation of dedicated transit lanes to bypass congested arterial segments. Examples include Los Angeles Metro Rapid and Boston Washington Street Silver Line.

- Diesel or CNG/alternative fuels standard.
- Typical speed: speeds up to the speed limit of the street they operate on, averaging about 25 mph (with stops).
- Low floor design.
- Designed for high-capacity corridors.
- Integrates well with street traffic, signals, and pedestrians.
- Typical passenger capacity: 40 seated plus standees (per bus).
- Typical length of line: 8-15 miles.
- Typical station spacing: 0.5-1 mile.

High-Frequency Local Bus:

Facilitates mid-to-short-distance trip-making within local communities, with closer station spacing. Local bus services serve as the backbone of the transit system and provide the primary access into local communities where fixed-route services are warranted.

- Typically standard and single articulated buses.
- Typical speed: speeds up to the speed limit of the street they operate on, averaging 12 mph (with stops).
- Low-floor design.
- Integrates well with street traffic, signals, and pedestrians.
- Operates in mixed-traffic with automobiles, but can benefit from transit-signal priority and queue jump lanes.
- Typical passenger capacity: 37-57 seated plus standees (per bus).
- Typical length of line: ranges from under 5 miles up to 25 miles.
- Typical station spacing: 1-4 blocks.
Item #3
REGIONAL COMPREHENSIVE PLAN: 2009 ANNUAL PERFORMANCE MONITORING REPORT

Recommendation:

The Regional Planning Committee is asked to recommend that the SANDAG Board of Directors accept the “Regional Comprehensive Plan: 2009 Annual Performance Monitoring Report” in substantially the same form as attached, and further recommends that the Board of Directors approve the revised schedule for biennial reporting in future years.
Operating since 1963
- 2,508 acres of land
- 2,860 acres of water

Five member cities
- Chula Vista
- Coronado
- Imperial Beach
- National City
- San Diego

Seven Commissioners
- Appointed by city councils
- 4-year terms
- Make policy for staff, under President & CEO, to carry out
Our Mission:
Balance regional economic benefits, recreational opportunities, environmental stewardship and public safety while protecting Tidelands Trust resources on behalf of the citizens of California

Created by Legislature to:
- Manage San Diego Harbor
- Administer public lands along the bay
Balance the needs and interests of a diverse region by serving as:

- An economic engine
- An environmental steward
- A provider of community services
- A leader in public safety & homeland security

Community Assets:

- 17 parks
- 6 playgrounds
- 2 basketball courts
- 10 miles of scenic walkways/bike paths
- 4 baseball fields
- 2 soccer fields
- 4 fishing piers
- 4 boat launch ramps
Tenant Mix:

• 14 hotels with 6,000 rooms
• 22 marinas with 8,000 slips
• 56 restaurants
• 3 shipyards,
• 9 boat repair facilities
• Over 30 industrial & service enterprises
• Over 100 retail stores
• 4 sportfishing companies
• Harbor tours operators, Maritime Museum, SD Aircraft Carrier Museum

NORTH EMBARCADERO VISIONARY PLAN
PHASE 1 - COASTAL ACCESS FEATURES

San Diego Unified Port District, Centre City Development Corporation, City of San Diego
NEVP PHASE 1 PART OF LARGER "TEN PLACES" CONCEPT

Ten Places

1. The Cove
2. Broadway-The Hall
3. Formal Grove
4. Market Square at B Street pier
5. The Lawns
6. Tavern on the Bay
7. The Wharf
8. Grape Street Pier & Little Italy Piazza
9. The Crescent
10. The Point

North Embarcadero Visionary Plan
San Diego California

Ehrenkrantz Eckstut & Kuhn Architects

Spurlock Poirier Landscape Architects

June 2005

NEVP Phase 1

PROJECT DESCRIPTION
PROJECT DESCRIPTION

NEVP PHASE 1 – BENEFITS

Energy Efficient Lighting

Urban Runoff Treatment
CHULA VISTA BAYFRONT
MASTER PLAN
PROCESS OVERVIEW

- Two Citizens Advisory Committees, 2003-2005
- Over 100 public meetings and outreach presentations
- Two-phase, 5-year environmental review process
- Final EIR - 12,000 pages in 7 volumes

EXISTING JURISDICTIONS

PROJECT DESCRIPTION
PROJECT DESCRIPTION

SWEETWATER DISTRICT
Our Region. Our Future.

2050 Regional Transportation Plan

Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan
Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan

- Background
- Definition of Adaptation
- Objectives for the 2050 RTP
- Identification of Problems
- State of the Planning Practice
- Issues and Policy Implications
- Recommendations

Background
Definitions

Mitigation: *Actions to reduce greenhouse gas emissions*

Adaptation: *Efforts that respond to the impacts of climate change – adjustments in natural or human systems to actual or expected climate changes to minimize harm or take advantage of beneficial opportunities*

SB 375 Implementation

- Regional targets for greenhouse gas (GHG) emissions to be established
- Sustainable Communities Strategy
  - New element of RTP
  - Meet regional GHG targets to be established by the California Air Resources Board
- Alternative planning strategy
Draft Climate Change Adaptation Objectives for the 2050 RTP

- Assess the 2010 California Regional Transportation Plan (RTP) Guidelines for addressing climate adaptation in the 2050 RTP
- Identify transportation strategies included in the 2009 California Climate Adaptation Strategy
- Evaluate adaptation efforts by other transportation agencies

Identification of Problems
Mission Beach – Potential Sea Level Rise by 2050

SOURCES: The Scripps Research Institute and the San Diego Foundation
Batiquitos Lagoon

Sea Level Rise: Vulnerable Population

San Diego 9,300
Sea Level Rise: Vulnerable Roads

San Diego
65 mi. (12% highway)

Sea Level Rise: Vulnerable Railroads

San Diego
9.8 mi.
State of the Planning Practice: Federal

- Interagency Climate Change Adaptation Task Force
- United States – Mexico Bilateral Framework on Clean Energy and Climate Change
- U.S. Department of Transportation’s Federal Highway Administration
- The U.S. Army Corps of Engineers

State of the Planning Practice: State

- 2009 California Climate Adaptation Strategy (CAS)
- 2010 California Regional Transportation Plan Guidelines
- The California Environmental Quality Act (CEQA)
State of the Planning Practice: Local

- City of Chula Vista
- City of San Diego
- Port of San Diego
- San Francisco Bay Area
- King County, Washington

Issues and Policy Implications

- Lack of quantitative data on vulnerability
- Limited funding resources
Draft White Paper Recommendations

1. Continue to monitor implementation of strategies in the CAS and evaluate for incorporation into the 2050 RTP

2. Evaluate the feasibility of developing preliminary mapping of vulnerable infrastructure following the 2010 California Regional Transportation Plan Guidelines

3. Monitor implementation of Executive Order S-13-08 California Sea Level Rise Assessment Report

4. Monitor regional and local planning climate change adaptation recommendations

5. Evaluate crossborder climate change adaptation strategies
For Future Analysis

1. Seek funding at the state or federal level to partner with other regional agencies to conduct a vulnerability analysis

2. Evaluate data and findings that could be applicable to future RTP updates and infrastructure projects

3. Assess existing and planned research for its applicability to better understand the impact of changes in sea level in other areas of strategic and economic importance

Overview of Climate Change Adaptation and the 2050 Regional Transportation Plan
Our Region.
Our Future.

2050 Regional
Transportation Plan
Goals

Urban Area
Initial Transit Concepts

Transit Propensity:
Expands transit in the most urbanized areas

Commuter Point-to-Point:
Emphasizes quick access to work

Many Centers:
Connects local smart growth areas and activity centers

Transit Mode Share Goals

2008
2030
2050
Performance of the Networks

Results

- All three scenarios yield significantly better results than existing transit network
- All three scenarios yield improvements over baseline scenario
- None of the scenarios performs best in all of the categories
- Many Centers has highest overall performance but has highest capital and operating costs
- Opportunity to incorporate most effective features of all three scenarios into a combined “Hybrid” strategy
Development of the Initial Unconstrained Transportation Network

2050 RTP Transportation Network Scenarios
- Unconstrained network
- Alternative revenue constrained scenarios
- SCS based on revenue constrained scenario
2050 RTP Process and Timeline

<table>
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<th>Spring 2010</th>
<th>Summer 2010</th>
<th>Fall 2010</th>
<th>Early 2011</th>
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<td>Goals and Objectives</td>
<td>Network Development All Modes</td>
<td>Plan Performance Measures</td>
<td>Ranked Projects by Category</td>
<td>Revenue Projections</td>
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<td>2050 Regional Growth Forecast</td>
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<td>Unconstrained Network</td>
<td>Revenue Constrained SCS Network Scenarios</td>
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<td>Revenue Constrained SCS Preferred Network Scenario</td>
<td>Draft 2050 RTP and EIR</td>
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<td>Apply Performance Measures</td>
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Initial 2050 Unconstrained Transit Network

- All three scenarios yield improvements over the existing transit network
- Opportunity to incorporate most effective features of all three scenarios into a combined “Hybrid” strategy
- Pedestrian and bike improvements
Transit Propensity Expanding Transit in the Most Urbanized Areas

Base Network

- High Speed Rail
- COASTER Rail
- Light Rail Transit
- Bus Rapid Transit
- Rapid Bus
- Streetcar/Shuttle-Circulator
- High Frequency Local Bus Services

Initial 2050 Unconstrained Transit Network

- High Speed Rail
- COASTER Rail
- Light Rail Transit
- Bus Rapid Transit
- Peak Bus Rapid Transit Commuter
- Rapid Bus
- Streetcar/Shuttle-Circulator
- High Frequency Local Bus Services
Initial 2050 Unconstrained Highway Network

- Potential modifications to the 2030 RTP unconstrained highway network
- Build upon existing plan to create an efficient and balanced system
  - Additional operational improvements
  - Refinements to the HOV/Managed Lane network and adjustments to general purpose lanes
Next Steps

- Your comments on:
  - Initial transit network
  - Initial highway network
- Draft unconstrained network to SANDAG Board meeting on July 23, 2010

Our Region.
Our Future.

2050 Regional Transportation Plan