TECHNICAL APPENDIX 11
INDEPENDENT TRANSIT PLANNING REVIEW
AND REGIONAL UNCONSTRAINED TRANSIT PLAN

INTRODUCTION

The passage of the TransNet Extension triggered a commitment to conduct an Independent Transit Planning Review (ITPR) of the transit element of MOBILITY 2030 to help determine the most cost-effective and efficient service and infrastructure plan for the region. This review process included the hiring of a technical consultant and formation of a peer review panel of transit and land use experts from across North America. On June 23, 2006, the SANDAG Board of Directors accepted the ITPR for planning purposes in the development of the 2030 San Diego Regional Transportation Plan: Pathways for the Future (RTP).

The ITPR includes recommendations on possible strategies for improving the role of public transportation in addressing regional mobility needs. The executive summary prepared by the technical consultant reflecting the key findings and recommendations from the peer review panel is included in this technical appendix.

As part of the process in developing the 2030 RTP, these strategies were used to develop a number of alternative transit scenarios that explored how best to maximize the effectiveness and efficiency of the regional transit system.

The regional transit system is an integral part of the multi-modal approach of the 2030 RTP. Having an effective system of commuter rail, light rail, bus rapid transit (BRT), local bus, and shuttle services that complements the local road and freeway system is critical to the goal of maximizing the person-carrying capacity of the overall transportation network. Achieving an effective and efficient transit system means focusing transit infrastructure and services in areas with transit-supportive land uses and having a system plan designed to attract new markets to transit by making it time competitive with the automobile. The benefits gained are not just to transit users, but to auto users as well. An improved transit system provides more travel choices for everyone, and the resulting increase in transit usage in key travel corridors translates into less demand on the highway network.

RTP PROCESS OVERVIEW

In developing the 2030 RTP, it was important to consider how best to focus our transit investments given the region’s commitment to the TransNet Early Action Program (EAP) and a network of Managed Lanes/BRT facilities. The recommendations from the ITPR regarding system design and performance suggested several themes to improve transit service in the region. A preliminary evaluation of these ITPR recommendations, along with other ideas suggested by local community groups, provided useful input on potential revisions to the transit network for the 2030 RTP to maximize its effectiveness in addressing regional mobility needs.

The Smart Growth Concept Map, which indicates different types of existing, planned, and potential Smart Growth areas in the region, provided a second key input into the development of the 2030 RTP related to transit. Serving these Smart Growth areas was a key tenet to coordinating land use and transportation decisions when evaluating revisions to the planned transit network.
INITIAL TRANSIT SCENARIO CONCEPTS

Staff developed a set of transit scenario concepts to test how different strategic approaches to the design and operation of the transit network compare with one another. While the focus of these scenario concepts is on the regional transit network, it is important to note that each scenario assumes a concurrent investment in roadway improvements, most notably in the current Managed Lanes/High Occupancy Vehicle (HOV) Lanes strategy. These initial scenario concepts also incorporated the existing/planned and potential smart growth areas included in the Smart Growth Concept Map. The MOBILITY 2030 Unconstrained Revenue scenario, along with four initial unconstrained transit scenario concepts, was tested:

Scenario #1 - Unconstrained Revenue Scenario Revisited

This alternative represents an updated version of the MOBILITY 2030 Unconstrained Revenue scenario that served as a benchmark for comparing how well the current Unconstrained Revenue scenario compares with the alternative scenarios outlined below. This alternative included both the highway and transit networks in the MOBILITY 2030 Unconstrained Revenue scenario, updated to reflect changes in the transit systems of the two transit agencies, including the Metropolitan Transit System’s (MTS) Comprehensive Operational Analysis (COA) that is now being implemented and the Fast Forward plan implemented by the North County Transit District (NCTD).

Scenario Concept #2 - Alternative Managed Lanes Strategy: Very High Occupancy Vehicles

The current Managed Lanes strategy is based on a multi-modal approach to maximize person throughput by giving priority to higher-occupancy carpool/vanpool (2+ person requirement) and BRT vehicles. Any excess capacity is assumed available to solo drivers for a fee through the FasTrak® program. Using the above unconstrained highway and transit network plan, this alternative scenario tested a strategy that emphasizes very high occupancy vehicles (3+ person carpools/vanpools and BRT) to determine if it offers the potential to achieve a higher-person throughput. This scenario also included an in-line station design to minimize transit travel times. Arterial priority measures also would be included to facilitate both BRT and local bus operation.

Scenario Concept #3 - Alternative Managed Lanes Strategy: Freeway Transitways

This scenario was similar to Scenario Concept #2 in terms of testing an alternative strategy for the Managed Lanes facilities to maximize person throughput; however, in this case, the strategy tested involved dedicating two of the four Managed Lanes to transit. A dedicated transitway allowed for a facility design that maximizes transit speeds and access. The remaining lanes would be priority access for 2+ carpools/vanpools.

Scenario Concept #4 - Transit Corridor Guideways

This alternative built off the approach in Scenario Concept #3 regarding freeways transitways, expanding the concept of dedicated transit facilities to areas outside the freeway corridors where warranted based on travel demand and opportunities for land use integration. Transit investment was focused in development of guideways that can best connect major demand origins and destinations in a way that maximizes transit system connectivity, community access to the system, and transit travel speeds. Transit guideways, either fully grade-separated or with at-grade crossings, offer the flexibility to operate an array of BRT services to facilitate operation of Local Bus “Blue Car” service (local trip-making), Corridor “Red Car” service (medium-distance corridor trip-making), and Regional “Yellow Car” service (longer-distance regional trip-making).
Scenario Concept #5 – Downtown/Urban Core Focus

This alternative built off the approach in Scenario Concept #4 above, but focused particular attention on the urban core areas in and around the various downtowns in the region (e.g., downtown San Diego, Escondido, Oceanside, and Chula Vista). These areas already have the most dense and transit-supportive land uses in the region today. Combined with dramatic increases in residential and employment growth forecast with the recently adopted Downtown San Diego Community Plan Update, the downtown San Diego area has one of the highest potentials for transit ridership and to achieve transit mode shares in line with those seen in cities with “world-class transit systems.” This alternative allowed for the testing of the potential to create such a transit system for this area.

The matrix below shows how each of the ITPR recommendations was factored into the development of each of the initial Scenario Concepts #2 through #5. (Scenario Concept #1 is the existing Unconstrained Revenue plan that serves as a benchmark for evaluation of the other four alternative scenarios.)

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<th>ITPR Recommendation</th>
<th>#2 – ML Very High HOV</th>
<th>#3 – ML Freeway Transitways</th>
<th>#4 – ML Transit Guideways</th>
<th>#5 Downtowns/Urban Core</th>
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<td>a. Good local bus system</td>
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<td>b. Dedicated transit guideways</td>
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<td>c. Alternative managed lanes</td>
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<td>d. I-15 ML station access</td>
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PREFERRED TRANSIT STRATEGY

Staff conducted detailed analysis of these five scenarios and recommended a hybrid approach, which was approved by the SANDAG Transportation Committee on December 8, 2006. More specifically, this hybrid strategy encompassed the following six key elements:

1. A rich network of transit services focused on the region’s urban core areas where transit-supportive land uses create the potential for attracting strong transit usage, including:
   a. High-frequency all-day service (10 minutes or better) on local bus services, and
   b. The addition of an arterial rapid bus system in key corridors aimed at creating higher-speed, limited-stop services.

2. A network of local and selected arterial rapid bus services in suburban areas that emphasize connectivity between regional destinations, but with service levels determined by demand.

3. An emphasis on maximizing transit mode share to key regional employment areas for peak-commute trip-making.
4. An investment in transit priority capital improvements and station designs needed to provide high-speed, reliable transit services:
   a. Continuation of the multi-modal Managed Lanes strategy that provides priority treatment for freeway bus rapid transit services (along with carpools);
   b. Further evaluation of in-line BRT station design for Managed Lanes facilities; and
   c. Extensive use of low-cost arterial transit priority treatments (signal priority, queue jump lanes) for local and arterial rapid bus services.

5. Further evaluation of dedicated transit guideways in the 4th/5th/6th Avenue/State Route (SR) 163 corridor between downtown and Kearny Mesa and in the University City/Sorrento Mesa areas.

6. Pursue the strategic initiatives outlined in the Regional Comprehensive Plan (e.g. smart growth development patterns, urban design, parking management strategies) that are integral components for the success of the RTP transit plan.

Staff reviewed this hybrid scenario with Caltrans, MTS, and NCTD and made several refinements based on these discussions. The revised unconstrained transit network incorporated a number of additional high-frequency local bus corridors, neighborhood and employment area shuttle circulators, and arterial rapid services in both the MTS and NCTD service areas. This network was forecast to nearly double the daily ridership in the region to 590,000 boardings, with an estimated cost of $20-23 billion in capital and operations and maintenance costs.

ITPR PANEL EXECUTIVE SUMMARY

Passage of the TransNet Extension included a commitment by the SANDAG Board of Directors to conduct an ITPR of the public transit system proposed in the RTP. SANDAG’s Transportation Committee endorsed creation of a peer review panel to lead the ITPR. The peer review panel was created to provide expert guidance and assistance to SANDAG to coordinate Smart Growth initiatives with the transit elements of the RTP process. The panel’s technical background and focus was transit and its relationship to land use. The intent of the review was not to redefine the RTP, but rather to provide guidance for the RTP update. Its review was a fresh and independent approach and did not have the benefit of input from riders and the community at large. The six members of the panel were:

- David Mieger, Los Angeles County Metropolitan Transportation Authority
- John Bonsall, McCormick/Rankin
- Richard Feder, Port Authority of Allegheny County, Pennsylvania
- Phil Selinger, Tri-County Metropolitan Transportation District, Portland, Oregon
- Linda Cherrington, Texas Transportation Institute (TTI)
- Robert Cervero, University of California, Berkeley

The ITPR panel met in San Diego on six occasions, in April 2005, July 2005, September 2005, November 2005, and March 2006. During these meetings, the ITPR panel completed several tasks, including:

- Toured key transit corridors
- Met with SANDAG, NCTD and MTS staff and working groups
Gained background and field knowledge on the scope and intent of the ITPR

Discussed and evaluated the SANDAG long-range transit planning and land use initiatives

Wilbur Smith Associates, Inc. (WSA) was retained to support the panel’s independent review of SANDAG’s plans. WSA researched issues that were raised by the panel, facilitated the November 2005 and March 2006 panel discussions, and prepared the final report on behalf of the panel.

PANEL-DEFINED ISSUES

Based on input from the panel, five basic, issue-oriented work tasks were defined by SANDAG. This ITPR draft report is structured around these five groups of issues, as described below.

1. Integration of Regional Transit Vision with Land Use Vision
   ▶ Compare the MOBILITY 2030 RTP’s transit element with the emerging Smart Growth Concept Map.
   ▶ Suggest refinements to the key transit corridors based on current transit mode shares, updated travel data, existing transit infrastructure, key activity areas, MTS’ COA, and NCTD’s Fast Forward plan.
   ▶ Research experience with smart growth strategies elsewhere, their successes in attracting new riders, institutional barriers that had to be overcome, and financial incentives needed. Discuss their potential application to San Diego.

2. Transit Level of Investment Strategy
   ▶ Refine the Yellow/Red/Blue/Green service concepts in light of current projects, the land use issues from Group 1 Issues 1 and experience in other cities.
   ▶ Develop definitions for different BRT gradations in light of corridor characteristics, speed/transit priorities needed, service frequencies, station spacing, and customer amenities/technologies.
   ▶ Evaluate the application, design, and trade-offs of light rail, Managed Lanes, bus guideway, rapid bus/enhanced bus investment strategies in light of MOBILITY 2030 and RCP goals, existing highway/transit infrastructure, sensitive areas (i.e., open space, habitat areas), financial resources, and capital and operating costs.
   ▶ Evaluate the role Smart Growth Area Opportunities (SGOA) can play in determining the transit level of investment, both in urban and suburban settings.
   ▶ Evaluate opportunities for integration of future technologies.

3. BRT and Trolley Operating Cost Model
   ▶ Research BRT cost experience in other North American cities.
   ▶ Develop a BRT cost model for the various BRT gradations (calibrated to San Diego costs) that factor in the various cost categories, including vehicle maintenance and operations, labor, station maintenance, security, fare collection/inspection, and marketing associated with a BRT operation.
   ▶ Evaluate current trolley operating costs to provide comparison with BRT costs.
4. Operating Strategies

- Develop operating strategy options for different corridor applications factoring in land use factors (densities, smart growth opportunities, urban design) and service characteristics (frequencies, span of service, transit markets to be served). Factor in MTS’ COA and NCTD’s Fast Forward service concepts.
- Identify trade-offs between direct (no transfer) transit service versus trunk/feeder service concepts.
- Evaluate the role of park and ride lots and shuttles in enhancing access to regional transit services.
- Apply a reasonableness check in terms of matching operating costs for the strategy options with available regional funding for operations.
- Use this information to develop realistic, mode-split goals for key transit corridors.

5. Patronage Modeling

- In conjunction with updating the SANDAG transportation model, evaluate methods used in other cities to model BRT services.
- Evaluate the potential for incorporating the market research information into ridership forecasting.
- Identify how Smart Growth concepts can be integrated with the travel demand modeling process.

PANEL CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are the outcome of the ITPR meetings held during 2005 and 2006 and respond directly to the major issues outlined in the previous section. They are organized into general categories, but are not otherwise ranked or prioritized.

General Conclusions

- The planning process should start with land use, not transportation; however, transit investments can be key tools in implementing the land use vision.
- The SANDAG Board appears to agree that livability, not just mobility, is a key goal of all SANDAG plans. The ITPR panel suggests that the RTP needs to facilitate the RCP vision of a balance between transportation and land use, leading to improved livability throughout the region. The “Build Out” threshold of an area can be increased and sustained with Smart Growth implementation, and through mechanisms such as in-fill and higher-density building. This also sets the stage for actions beyond 2030.
- The SANDAG Smart Growth plan’s effectiveness is diluted by the effort to apply Smart Growth principles too broadly. A more effective strategy might be to focus Smart Growth incentives in areas where a more immediate effect could be realized. These same (more urbanized) areas should be better candidates for enhanced transit service linked to Smart Growth land use.
- Behavioral changes, supportive land uses, parking policy, etc. are often a greater determinant of transit system ridership than building more transportation infrastructure.
- Transit investments can help to steer growth into Smart Growth centers/corridors. Highway investment should support (not undermine) livability and transit investment goals.
- Transit, mode-share goals should be set for corridors and sub-areas of the region where the greatest potential for Smart Growth exists. The transit mode share and land uses should be monitored to measure the effectiveness of transit investments.
Downtown San Diego is a key to the success of the regional transportation system. It is the major regional center and should be supported with an efficient, seamless, and convenient transit system. Other issues such as capacity, interlining, transit priorities, and service levels need to be addressed. Downtown San Diego may need a large, multi-modal transfer station.

Downtown transit plans should support the Downtown Community Plan Update development vision. Urban Villages should be distributed along corridors to ensure bi-directional travel flows throughout the day.

People will self select to live in communities that are well served by transit. The demand for such communities is significant and will increase because of population aging. Identify locations with a high potential for densification that are promising markets for improved transit service.

The transit planning approach should be a top-down effort, starting with creating a good system plan and then bringing the process to the corridor level. Ensuring a strong critical network is in place to meet modal share is the most important thing.

Attention to pedestrian circulation and transit access is critically important to success of Smart Growth.

The region’s vehicle miles traveled (VMT) is forecasted to grow 13 percent faster than the population, and the average freeway speed will increase from 51 mph to 55 mph. A 38 percent increase in freeway lane-miles is a highway-heavy solution to the region’s mobility needs, and more emphasis should be given to transit.

The basis for an effective transit network is local bus service. Successful local routes with frequent headways and good farebox recovery rates are candidates for service upgrades, including BRT.

Look for one or two demonstration projects to create excitement about the transit system. A natural place to start is the “low-hanging fruit” opportunities where land use opportunities can be leveraged.

**Managed Lanes**

The panel feels that Managed Lanes are primarily a highway solution to mobility, not a “transit first” approach. The dramatic increase in freeway capacity that Managed Lanes will provide will perpetuate auto-oriented development and reduce transit’s competitiveness.

It might prove possible through pricing and other strategies to minimize the undermining aspects of Managed Lanes on transit.

The panel understands the need for a balanced, multi-modal RTP that reduces the growth in congestion and provides greater modal choices, but contends that the extent of Managed Lanes in the RTP will tend to diminish the transit mode share of regional trips.

The priority for major transit capital investment should not be directed toward the Managed Lanes corridors, but consideration should be given to exploiting the potential of Managed Lanes for transit, such as express buses.

Concern over the I-15 Managed Lanes BRT concept is that the design is primarily oriented as a highway facility rather than as a busway. A good busway design minimizes out-of-direction travel for transit users and makes transit more visible to the public BRT and other services operating in Managed Lanes corridors should be given priority at congestion bottlenecks and at Managed Lanes access/egress points, and pricing for auto access should be adjusted to maintain free-flow conditions for transit.

Major transit capital investment (such as stations and park and rides) should not be made to serve less dense areas of the region. Carpools, express, and feeder bus service should utilize managed lanes; however, the preponderance of transit funding should be applied to corridors that serve higher concentrations of transit riders.
The I-805 corridor appears to have significant potential for major transit capital investment and high-capacity transit service, possibly in coordination with Managed Lanes.

The following service options for the I-15 Managed Lane BRT should be investigated:
- Dedicate two of the four lanes to transit and three-person carpools and/or truck;
- Separate two of the lanes out as a busway, with appropriate design features; and
- Consider a two- versus four-lane Managed Lanes facility.

**Mid-Coast Corridor**

- The ITPR panel supports the re-investigation that is taking place for this corridor.
- The University Town Centre TC portion of the Mid-Coast corridor is a good example where infill, parking management, etc. can support a good transit circulator.
- The panel questions why the BRT option that is identical to LRT is being examined. This option does not take advantage of the strength of BRT and does not fully exploit the advantages (flexibility, etc.) offered by BRT.
- The Mid-Coast evaluation should consider the transit opportunities in the I-805 corridor as well as the potential role of the COASTER. This would entail broadening the Mid-Coast corridor study area, or at a minimum, greater consideration of its regional context.
- The COASTER deserves special consideration for service upgrades. It could provide significantly more mobility in the Oceanside-San Diego corridor with investment in equipment, but without the high-capital investment needed to construct extensive new track.
- Considering the draft BRT alternatives, the configuration with branches at both ends of the transitway appears to maximize the advantages of BRT.
- Natural topographical constraints limit LRT opportunities and may make BRT a better choice.
- Consider a circulator in the UTC region with reduced Mid-Coast trunk line stations.
- Intermediate stations are spaced too far apart, and development densities are too low to support a major capital investment in transit between Old Town and UTC. Transit demand in the corridor can be met more efficiently with high-frequency bus service. If more densification occurs, the corridor could support high-capacity transit.
- If BRT is selected as the preferred mode, the connection to and accommodation of BRT in Downtown San Diego are major issues.

**Parking Policy**

- Parking policy should complement and reinforce Smart Growth. It should reduce incentives to drive by managing the price and amount of available parking.
- There is an inverse relationship between the amount of transit patronage and the amount of destination parking. As the amount of destination parking increases, the tendency to use transit decreases. This should be considered during the RTP update.
- Smart Growth area definitions should include guidelines for parking, including pricing, restrictions, maximums, design guidelines, etc.
- Viable transit needs to be in place to support a more restrictive parking policy. A more restrictive parking policy alone will not reduce automobile dependency.
Transit-oriented development (TOD) should not be precluded by putting large parking lots/structures around transit stations. On the other hand, surface parking can be a land banking opportunity to ensure that the land is held for future TOD opportunities.

The panel recommends against designing parking for maximum events. Instead, lower parking requirements or institute parking maximums.

**Transportation Model**

The regional transportation models need to be enhanced to reflect Smart Growth impacts on land use and transportation. Though it is impossible to upgrade the model in the short term to recognize Smart Growth inputs, post processing can be used to incorporate Smart Growth effects. For example, post processing adjustments might be appropriate to capture very high transit ridership in corridors with a high proportion of transit-dependent riders or in corridors where transit service levels are very high and the model underestimates patronage.

The model appears to overstate transit ridership as substantial patronage increases will be very difficult with the forecasts maintenance in levels of congestion and maintenance of parking policies.

The model lacks a discrete BRT mode constant; consequently, BRT is projected to perform as if it was LRT. This overpredicts BRT ridership unless all BRT services operate with the same amenities as LRT.

**Individual Transit Corridors**

More emphasis should be placed on selecting exclusive bus corridors/BRT/Busways rather than fitting them into highways and existing rights-of-way. The potential for increased transit ridership is more dependent on social, economic, and land use factors and in development of patronage than on available rights-of-way. Look at possibility of upgrading local streets and blue car services for transit solutions – not just at the highway corridors. El Cajon Boulevard is an excellent example of successful local transit service. Successful transit corridor service can be upgraded incrementally to achieve ultimate BRT service.

Recognize that corridors can include several types of BRT in various services.