TRANSPORTATION COMMITTEE AGENDA

Friday, April 6, 2007
9 a.m. to 12 noon
SANDAG Board Room
401 B Street, 7th Floor
San Diego

AGENDA HIGHLIGHTS

• REGIONAL TRANSIT PERFORMANCE MONITORING SYSTEM

• PUBLIC HEALTH IMPACTS OF LAND USE AND TRANSPORTATION PLANS

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TRANSPORTATION COMMITTEE
Friday, April 6, 2007

ITEM #

+1. APPROVAL OF MARCH 16, 2007, MEETING MINUTES

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Members of the public will have the opportunity to address the Transportation Committee on any issue within the jurisdiction of the Committee. 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 ITEMS (3 through 4)

+3. BIANNUAL TRANSIT DEVELOPMENT REVIEW REPORT (Chris Kluth) INFORM A TION

This item summarizes the results of SANDAG’s efforts to coordinate transit and land use through the project development review process during the months of July through December 2006. SANDAG staff works closely with local jurisdictions to ensure the integration of transit facilities into development projects and to improve the pedestrian environment wherever possible. During the period, these efforts resulted in the inclusion of $873,450 worth of privately funded transit and pedestrian facilities.

+4. TRANSPORTATION DEVELOPMENT ACT CLAIM AMENDMENT (Sookyung Kim) APPROVE

At the November 17, 2006, meeting, the Board approved the FY 2007 Transportation Development Act (TDA) allocation for the Coordinated Transportation Services Agency (CTSA). The initial claim for $87,098 excluded certain operating costs from its budget. As a result, CTSA requests an additional $8,000. There are sufficient funds remaining from the original allocation to meet this request. The Transportation Committee is asked to approve Resolution No. 2007-22 increasing the TDA claim for the CTSA.

REPORTS (5 through 10)

+5. BUDGET TRANSFER FOR LRT STATION SHELTER REPLACEMENT PROJECT (Pete d’Ablaing) APPROVE

The Transportation Committee is asked to approve a transfer of $90,000 from the Metropolitan Transit System Capital Needs Assessment Project to the Light Rail Transit Station (LRT) Shelter Replacement Project to pay for final quantities, flagging, and administration and construction management at the Cesar E. Chavez/25th and Commercial Trolley Station.
+6. **SPRINTER PROJECT STATUS REPORT AND SANDAG INDEPENDENT ASSESSMENT** (Jim Linthicum, SANDAG)  

This item provides a monthly status report on the SPRINTER rail project, including discussion of implementation and effectiveness of project cost control measures. North County Transit District and SANDAG staffs will summarize recent progress on the project.

+7. **REPORT ON REGIONAL TRANSIT PERFORMANCE MONITORING SYSTEM** (Dan Levy)  

SANDAG Board Policy No. 018 establishes a requirement for a quarterly evaluation of the transit performances for both the Metropolitan Transit System and North County Transit District operations. This agenda item is the first of ongoing transit performance reports that will be brought to the Transportation Committee on a quarterly basis. This report outlines the quarterly transit system evaluation methodology and performance for the first quarter of FY 2007 (July to September 2006).

+8. **CALIFORNIA STATEWIDE HIGH-SPEED PASSENGER RAIL SYSTEM QUARTERLY UPDATE** (Linda Culp)  

The California High-Speed Rail Authority (CHSRA) is the state agency responsible for planning, constructing, and operating a high-speed train system serving California’s major metropolitan areas. The proposed system stretches over 800 miles and would connect San Diego, Los Angeles, the Central Valley, San Francisco, and Sacramento using a state-of-the-art, electrified system capable of speeds in excess of 200 miles per hour. SANDAG continues to monitor the work on the CHSRA. This report is the regular quarterly update to the Transportation Committee.

+9. **LINEAR INDUCTION RAIL TECHNOLOGY DEMONSTRATION PROJECT** (Sandor Shapery, Transportation Committee Advisory Member; Kim Kawada, SANDAG)  

The Transportation Committee is asked to discuss the proposed linear induction motor rail demonstration project, and consider supporting a proposal for a federal funding grant or earmark. If the Committee supports the funding request, it should require that the proposal does not compete for the same federal funding programs as other high-priority transportation projects from SANDAG, Metropolitan Transit System, or North County Transit District.

10. **PUBLIC HEALTH IMPACTS OF LAND USE AND TRANSPORTATION PLANS** (Tracy Delaney, County of San Diego Health and Human Services)  

Childhood obesity is a significant and growing health concern that has reached epidemic proportions. The San Diego Childhood Obesity Action Plan addresses this challenge through multiple strategies and domains. Tracy Delaney from the County of San Diego Health and Human Services will discuss childhood obesity and the emerging connections between public health, land use, transportation planning, and urban design.
11. UPCOMING MEETINGS

The next meeting of the Transportation Committee is scheduled for Friday, April 20, 2007, at 9 a.m.

12. ADJOURNMENT

+ next to an agenda item indicates an attachment
TRANSPORTATION COMMITTEE DISCUSSION AND ACTIONS
MEETING OF MARCH 16, 2007

The meeting of the Transportation Committee was called to order by Chair Jim Madaffer (City of San Diego) at 9:07 a.m. See the attached attendance sheet for Transportation Committee member attendance.

Chair Madaffer noted that Item No 13, LIM-Rail™ Technology Demonstration Project, was being pulled from today’s agenda.

1. APPROVAL OF MEETING MINUTES

Action: Upon a motion by Deputy Mayor Jerry Rindone (Chula Vista) and a second by Councilmember Bob Emery (Metropolitan Transit System [MTS]), the Transportation Committee approved the minutes from the March 2, 2007, meeting.

2. PUBLIC COMMENTS/COMMUNICATIONS/MEMBER COMMENTS

Chuck Lungerhausen, a member of the public, solicited donations for the 2007 Multiple Sclerosis (MS) Walk. On the public transportation front, at the recent MTS Access Committee and SANDAG’s TAAC meetings he heard complaints regarding manual wheelchair access for the new low-floor trolley vehicles. He knows the designs of the low-floor vehicles meet Americans with Disabilities Act (ADA) requirements. Since he is in an electric wheelchair, he didn’t understand why these individuals could not negotiate the ramp.

Clive Richard, a member of the public, said that he found a General Administration Office (GAO) report online that talked about the transportation disadvantaged population and what would be done to evaluate those individuals in case of an emergency or disaster. He ordered the report and will share it with the Transportation Committee as it involves challenges with this issue. He mentioned that Orange County puts all of its internal audit reports on its Web site. He hoped that the new SANDAG internal audit position will create an aura of public access. It’s important that government be open.

CONSENT ITEMS (3 through 5)

3. ACCEPT SUPER LOOP ENVIRONMENTAL DOCUMENT FOR DISTRIBUTION (ACCEPT)

The Super Loop is a TransNet Early Action project that implements a new circulator route in the North University City area of the City of San Diego. The Transportation Committee is asked to accept the draft Initial Study/Negative Declaration for a 30-day public review and comment period.
4. METROPOLITAN TRANSIT SYSTEM AND NORTH COUNTY TRANSIT DISTRICT FEDERAL TRANSIT ADMINISTRATION SECTION 5311 (F) GRANT APPLICATIONS (APPROVE)

Federal Transit Administration (FTA) Section 5311 (f) provides funding for operations and capital projects that help individuals in rural communities access services in suburban and urban centers. This is a competitive program administered by the State through Caltrans. MTS and the North County Transit District (NCTD) plan to submit applications, which require SANDAG’s certification that the funds, if approved, will be programmed. The Transportation Committee is asked to adopt Resolution Nos. 2007-17 and 2007-18, approving the MTS and NCTD Section 5311(f) applications and authorize the Executive Director to sign the certifications required for the application process.

5. FY 2008 TRANSIT CAPITAL IMPROVEMENT PROGRAM (RECOMMEND)

MTS and NCTD have developed their Capital Improvement Programs for FY 2008, which forms the basis for the Federal Transit Administration Section 5307 Urbanized Area formula fund grant, the Section 5309 Rail Modernization formula fund grant, and the Regional Transportation Improvement Program (RTIP) amendment for transportation projects. SANDAG is responsible for programming these funds and approving these grants. The Transportation Committee is asked to recommend that the SANDAG Board of Directors approve: (1) the FY 2008 Capital Improvement Program for the San Diego region (MTS and NCTD) including the transfer of funds from MTS to SANDAG for planning studies; (2) the submittal of FTA Sections 5307 and 5309 applications for the San Diego region (SANDAG, MTS, and NCTD); and (3) Resolution No. 2007-19, adopting Amendment No. 3 to the 2006 RTIP.

Action: Upon a motion by Deputy Mayor Rindone and a second by Councilmember Emery, the Transportation Committee approved Consent Items 3 through 5 including Resolution Nos. 2006-17 and 2006-18.

REPORTS (6 through 13)

6. LAKE HODGES BICYCLE AND PEDESTRIAN BRIDGE FUNDING (RECOMMEND)

Coleen Clementson, Principal Planner, provided a staff report that explained the funding of this project and the request for FY 2009 TransNet Bicycle, Pedestrian, and Neighborhood Safety monies to complete the funding gap. She noted there is some urgency to the requested action as monies will be lost if a contract award is not completed by this summer. She added that the Bicycle/Pedestrian Working Group supported this project. She stated that Susan Carter from the San Dieguito River Park was in attendance for questions.

Deputy Mayor Rindone asked why we would put a bridge across the lake. Ms. Clementson said that this is part of the regional bicycle network. Now bicyclists ride on Interstate 15 (I-15). This bridge would provide a connection through the River Park. She noted that the bridge has a fairly low-profile design.
Deputy Mayor Rindone wondered why bicyclists wouldn’t want to ride around the lake. He expressed difficulty in supporting this funding request without rationale. Ms. Clementson said that if you are using a bicycle for your primary mode of transportation, you want the most direct route. This bridge would open bicycling up as an alternate mode of transportation, and we have to make sure there are direct connections on the regional system.

Kathy Keehan, representing the Regional Planning Stakeholders Working Group, stated that the detour around the lake is 13 miles in one direction over two hill ranges and 25 miles in the other direction.

Chair Madaffer asked about the length of the bridge. Ms. Clementson replied that it would be 1,000 feet long.

Susan Carter, Deputy Director of the San Dieguito River Park and Project Manager, said they believe this will be a beautiful project with a stress ribbon design. The project would have only two piers in the lake. She said that SANDAG Engineering staff had some questions on the project budget. She offered to meet with them to discuss their concerns. Ms. Carter reiterated the timing urgency on this project. They have begun the first phase and need SANDAG’s help to continue.

Deputy Mayor Rindone expressed general concern about feeling pressured to vote on an item with the threat of losing funding if action is not taken. Staff needs to bring these items to us earlier. He stated that he will not support this because he still has questions.

Chair Madaffer mentioned that this item will come back to the SANDAG Board of Directors next Friday. This is not the final stop for this issue. We will review the numbers between now and then.

First Vice Chair Lori Holt Pfeiler (Escondido) commented that this would not be the only bridge that crosses this lake.

Councilmember Ed Gallo (NCTD) said that it is time to take action on this. He didn’t feel the Committee was being pressured to act.

Deputy Mayor David Druker (Del Mar) agreed with Deputy Mayor Rindone in terms of the concept of using the threat of losing funding as an impetus to act. However, that is not the case with this project. This item has come before the Transportation Committee before. Because of the funding shortfall, and the request to use TransNet funding, this item had to go before the independent Taxpayers Oversight Committee (ITOC). This project has been around for quite some time.

Councilmember Jerry Kern (Oceanside) asked how wide the bridge would be. Ms. Clementson responded that it would be 12-feet-wide.

Second Vice Chair Jerome Stocks said that what you are lacking in the staff report is the context regarding the roads that connect to the bridge. He suggested that this information be added to the agenda report when this comes before the full Board.
Diane Eidam, Chief Deputy Executive Director, noted that this item will go before the ITOC on Wednesday, March 21, prior to the SANDAG Board meeting.

Chair Madaffer said that for the next report to the full Board, staff should provide better bridge renderings showing road connections, and the project timeline. This will help to provide an understanding of the project’s progress, especially for the new Board members.

**Action:** Upon a motion by Deputy Mayor Druker and a second by Councilmember Emery, the Transportation Committee recommended that the SANDAG Board of Directors approve programming an additional $1.875 million in FY 2009 TransNet Bicycle, Pedestrian, and Neighborhood Safety funds for the Lake Hodges Bicycle and Pedestrian Bridge. The motion passed with Deputy Mayor Rindone voting in opposition.

7. 2007 REGIONAL TRANSPORTATION PLAN: INITIAL REVENUE CONSTRAINED AND REASONABLY EXPECTED REVENUE SCENARIOS (DISCUSSION/POSSIBLE ACTION)

Mike Hix, Principal Planner, and Linda Culp, Senior Planner, provided a staff report to introduce this item. Mr. Hix stated that in developing the 2007 Regional Transportation Plan (RTP), staff prepared the Unconstrained Network, which represents the region’s vision for reasonable transit, highway, and arterial improvements and operations to meet travel demand in 2030. Recognizing that transportation funds are limited, the Unconstrained Network establishes the baseline for identifying two funding scenarios that will build and operate as much of the network as possible, given revenue availability, flexibility, and project commitments. The two funding scenarios are Revenue Constrained, limited to traditional funding sources, and Reasonably Expected, a more aggressive scenario that includes new potential funding sources. The MOBILITY 2030 RTP, adopted in 2003, was based on a Reasonably Expected revenue scenario.

Chair Madaffer noted that there was one request to speak on this item.

Jay Powell, City Heights Community Development Corporation, expressed support for the RTP and the Revenue Constrained scenario that will include a phased-in service lane that brings bus rapid transit (BRT) stations and transit lanes on-line in this decade. Project No. 610 is the North-South Escondido to Centre City project, listed in Attachment 4 for funding in 2014. This is a date for air conformity performance. They would like to see this project completed sooner. He supported Project No. 611, an El Cajon Boulevard project. He also supported the improved connections to I-805, SR 94, and I-15, linking the rest of the region to the South Bay. These connections will promote smart growth plans and improve transportation options for employees for urban core-related jobs.

Councilmember Emery said that Option B in the Reasonably Expected Scenario talks about the enhanced Revenue Constrained network and would invest in existing transit services. This is extremely important. We can’t forget the existing infrastructure and services. He supported Option B.

Councilmember Monroe said that on slide 11 there is a phrase that indicated support by the Board for a sales tax increase. He wondered where that came from. Mr. Hix replied that this was taken from the results of the interactive survey from the Board and from surveys of the public.
Councilmember Monroe noted that when given forced choices, the result cannot be called support. The Board is not ready for an increased sales tax. Mr. Hix stated that an increased sales tax option was supported by the public, and it generated by far the most money.

Councilmember Monroe countered by saying that the phrase indicating the Board supported increased sales tax is inaccurate.

Chair Madaffer clarified that if the Transportation Committee chooses to continue moving forward with the Revenue Constrained scenario, only expected revenues with the infrastructure bond will be included, and it does not contemplate funding from other sources.

Deputy Mayor Druker asked about the changes on the Major Capital Improvement in the Revenue Constrained Scenario from 2006 to 2007 and how the revised figures were derived. Ms. Culp replied that in some cases, the figures reflect project studies completed and cost escalations from moving projects around.

Deputy Mayor Druker asked for a copy of the criteria being used to rank the projects. Ms. Culp agreed to provide that information to him.

Deputy Mayor Druker mentioned that one of the projects not in the 2030 plan is the new “blue line” for goods movement from the border to San Bernardino. That line needs to be included in our plans at some point. If freight can use an Inland corridor, then we can redesign the coastal corridor. On the Reasonably Expected Scenario, what would the impact be if we were to move more money to transit? In other words, what would our network look like with an improved transit option?

Mr. Hix stated that an inland rail would include a goods movement action plan to the RTP; however, it would not rank high for funding in the Reasonably Expected Scenario.

Deputy Mayor Druker suggested the possibility of other types of funding for the project that might not affect the TransNet bottom line.

Supervisor Roberts expressed concern that the suggestion of increased sales tax has been raised. There are some fundamental decisions related to that suggestion that have not been made. He said that at a recent state-level meeting while looking at ports and goods movement, it became clear to him that staff has left out one of the most serious issues in terms of goods movement and that is the major land port at the border. The state has been focusing on sea ports. There is an enormous volume of goods that will come through the border, and the question is will it come through land or sea. There is no way for us to consider an inland freight train if it is not in our plans. This will be one of the most important decisions for this area. A discussion needs to take place regarding goods movement throughout the county.

Diane Eidam, Chief Deputy Executive Director, apologized for the phrase regarding Board support for an increased sales tax. Staff understands that is not a done deal. That particular source would provide a substantial amount of money and give the Board funding latitude. The input provided to staff will help us determine how much support there is for a variety
of funding sources and to craft the next steps. Regarding goods movement and air quality, the Executive Director is attending a meeting today with the California Transportation Commission (CTC) to discuss that very issue. The economic benefits of an inland corridor need to be identified.

Chair Madaffer stated that what is in front of us today is the $40.6 billion contained in the Revenue Constrained Scenario. There are no other monies that have been identified. The TransNet Extension included language related to another possible vote on quality of life issues. When we look at these additional revenue sources for regional transportation, it is important that we hear and understand the available options. We are constantly hearing the need for transit, bicycle, and open space commitments.

Deputy Mayor Rindone said that the concern of the South Bay cities is the support that area gave to the TransNet Ordinance and the proportion of those monies being spent in this segment of the county. He asked about the delay or the elimination of the HOV lanes south of Palomar Street. He was not able to tell when this work would be rescheduled. That is a key factor and continually exacerbates the disproportionate view of the amount of monies to be spent in the South Bay.

Mr. Hix stated that if we want to include the additional monies for the HOV lanes south of Palomar, the funding would have to be swapped from a different project than the Revenue Constrained Scenario, or generated from additional revenues. Deputy Mayor Rindone was concerned that this project had been removed from the list. He asked that these options be examined.

Mr. Hix stated that the downscoping was based on Caltrans, SANDAG, and local jurisdictions based on demand and funding constraints. When we finalize the project rankings, we will show the impacts with and without this South Bay HOV segment on the Revenue Constrained Scenario.

Deputy Mayor Rindone noted a positive for the South Bay is the high priority ranking for the BRT Otay Mesa to Sorrento Valley project. That will help to stem the South Bay's growing disenchantment with how the TransNet projects are portrayed and phased in.

Ms. Keehan noted that there were several errors on the information provided. Mr. Hix agreed to fix those errors when this item goes before the Board.

Ms. Keehan asked about a significant decrease in funding for transit projects compared to highway projects between the previous MOBILITY 2030 and this report. Ms. Culp explained that part of the difference is related to the inclusion of direct access ramps in the transit budget last time. For this time around, they have been added to the highway budget. Other changes are related to adjustments on some of the projects. Ms. Keehan stated that it is helpful to have this clarified.

Ms. Keehan asked if we will spend all of the 40-year TransNet dollars by 2030 in this Revenue Constrained Scenario. Mr. Hix responded negatively.
Ms. Keehan asked how much will be left over after 2030. Jose Nuncio, Senior Engineer/Financial Programming, replied that the balance will include the revenues collected and the borrowing proceeds.

Ms. Keehan expressed concern about the apparent emphasis on highway and managed lanes and not on transit.

Councilmember Monroe suggested that the Coordinated Transit Service Agency (CTSA) should be added to the RTP. Ms. Culp said staff agrees with that suggestion and will add that in.

**Action:** The Transportation Committee provided direction to staff on the draft scenarios contained in this report.

8. **TransNet BUDGET UPDATE: PROPOSED METHODOLOGY AND PROCESS (APPROVE)**

Richard Chavez, Principal Engineer, reported that construction price increases have resulted in increased costs for large capital transportation improvement projects throughout the region, and at other levels. Historically, the Caltrans Construction Index has been used to inflate TransNet project budgets. He outlined a proposed methodology and process for escalating TransNet budgets. The proposed methodology would use the TransNet Ordinance to establish the budgets, escalate the amounts to the current year, then use the Revenue or Caltrans Index, whichever is less, or a 2 percent minimum. The budgets would then be escalated to the year of expenditure using a figure of 3.6 percent per year. He noted that we would ensure a 50 percent funding match from state and/or federal sources for these projects. Mr. Chavez stated that the projects would be presented with three options: Option A would stay within the TransNet budget according to the proposed methodology; Option B would be more costly, but would better meet the mobility demands in the corridor; and Option C would include project features that are nice to have, but are not necessary for mobility purposes.

Chair Madaffer commented that with the way projects are going up in cost, we may never get to the options.

Deputy Mayor Druker asked why we would use the Caltrans Construction Index or the TransNet index in terms of escalating the current year. Mr. Chavez replied that because of rapid escalation, the Construction Index may not fit those budgets within the expected revenues.

Deputy Mayor Druker wondered why we would use a lower number to cover the construction costs from 2002 to today. Mr. Chavez said that the analysis of the TransNet Ordinance used all of the expected revenues for the 40-year revenues. It is difficult to assume that we can escalate all of the budgets according to the Caltrans index.

Ms. Eidam said that one of the factors is that the Caltrans cost index has followed the traditional line and has only seen the spikes over the recent past. We’ve underestimated what these costs will be in the future by minimizing the revenue. Mr. Chavez added that one of the factors is that at the statewide level the cost of the Bay Bridge skews the Caltrans index, and we don’t have 100 percent faith in the Construction Index at the local level.
Deputy Mayor Druker suggested that we create an index for only San Diego that is based on real numbers.

Pedro Orso-Delgado, Caltrans District 11 Director, said that Caltrans is in the process of reviewing its own cost index.

Second Vice Chair Jerome Stocks suggested that we use the projects that have been constructed between 2002 and 2007 to establish the construction rates. Using a 6 percent inflation factor is reasonable, but it is based on past information.

Chair Madaffer suggested that this item come back at the April 6 Committee meeting. We need to be cognizant of the fact that there are a lot of projects being bid on now. Too much work can affect the price.

Jack Boda, Director of Mobility Management and Project Implementation, stated that when you take a look at the Caltrans cost index, it is a statewide look. The Bay Bridge really spiked a lot of costs. We cannot take a look at the historical perspective as a result.

Mr. Orso-Delgado commented that we could pull the actual construction bids on a local basis and provide that information.

Supervisor Roberts said it seems that we are projecting costs on the basis of what our revenues are even though the two figures are not related. What we want are realistic cost estimates so that we have a basis for making decisions.

Action: The Transportation Committee directed staff to report back with additional information at the April 6 meeting.

Chair Madaffer called a break at 10:47 a.m. The meeting was reconvened into open session at 10:58 a.m.

9. COST IMPLICATIONS OF NEW EMISSION REQUIREMENTS FOR OFF-ROAD DIESEL ENGINES (APPROVE)

Mr. Chavez referred to a blue sheet for this item.

Chair Madaffer noted that the recommended action has been changed from “approve” to “information.” He outlined the order of this item that called for the staff report, a report from the California Air Resources Board (CARB) representative, and public comment.

Mr. Chavez said that in a report presented to the Committee in November 2006, he provided information on the cost implications of new regulations being proposed by CARB for off-road diesel equipment. The regulations address health concerns caused by Particulate Matter (PM) and Oxides of Nitrogen (NOx) in emissions from off-road, diesel-powered equipment. Costs to comply with the rule include retrofitting existing engines and replacing older engines with newer, less-polluting engines. It is estimated that the new regulations will cost transportation projects in the San Diego region $200 million between the effective date of 2009 and 2019. Mr. Chavez showed a comparison of contractor and
CARB equipment turnover rates. The CARB’s proposed regulation will require fleet turnover within a 10-year period. This will dramatically devalue contractor’s equipment for bonding purposes. The Carl Moyer Grant Program is a publicly funded program retrofitting construction equipment. No credit is being given for contractors who volunteer to take part in this program.

Tony Brasil, representing the CARB, said that the air quality problems in California are severe, and the deadline for air quality attainment is 2015. The cost of the regulation is estimated at $3 billion. He acknowledged that there are a number of new equipment fleets, and this regulation won’t have much effect. The statewide average annual turnover rate is about 5 percent. The 40-year turnover is the extreme on the oldest fleets. We set up the regulations to create as much flexibility as possible. Contractors can buy used equipment to replace old equipment, engine re-power and NOx control devices to place on equipment, and particulate matter vents. There are provisions for small businesses. He acknowledged that it will be more difficult for companies with large engine fleets to take advantage of the Carl Moyer program. Smaller companies can continue to apply for this program.

Deputy Mayor Druker asked if equipment has been available over the last 3 to 4 years to meet the standards of 2014. Mr. Brasil replied that as far as PM devices are concerned, there are three for the off-road sector. For the on-road sector, there are 30 PM devices. Companies can replace equipment with new or used.

Deputy Mayor Druker asked if engines are available today that meet the new standards. Mr. Brasil responded negatively. The way the rule is proposed prompts us to look at engines going forward.

Supervisor Roberts asked if a contractor buys equipment this year would he be required to get new equipment by 2015. Mr. Brasil replied that a maximum of 10 percent turnover per year is required. No vehicle less than 10 years old would have to be turned over in less than 10 years.

Supervisor Roberts asked about the availability of new technology. Mr. Brasil stated that new engine standards will be available in the future, and we are trying to accelerate those purchases. To the extent the NOX control devices are approved, they will improve the standards. Manufacturers have concerns about certifying technology that won’t be available for several years.

Kevin Siva, representing the Southern California Tribal Chairmen’s Association (SCTCA), asked if CARB took into consideration the cost of new equipment in its impact cost estimate. Mr. Brasil responded affirmatively, and said that the cost estimate included factors such as the cost of maintenance of filters, down time of vehicles to install new equipment, some increased costs of the new technology engines, and an estimate for some loss of value of the older equipment. He noted that half of the engine fleets average less than 12 years old.

Councilmember Gallo asked if any thought had been given to replacing engines with alternative fuels. That would be a lot less expensive. Mr. Brasil said that would only work for the PM; however, there is a concern that biodiesel would increase the amount of NOx. Companies can use alternative fuels as part of their strategies to comply with the regulations. The verification strategy will include consideration for fuel.
Councilmember Gallo asked if vehicles crossing the border from Mexico will have to meet these regulations. Mr. Brasil answered that they will.

Second Vice Chair Jerome Stocks asked if CARB is working with the Mexican government on its off-road equipment requirements. Mr. Brasil responded negatively.

Second Vice Chair Stocks commented that this county shares an air basin with Mexico, and he expressed frustration that CARB has not worked with Mexico on the implementation of these regulations. Old equipment will be rolled south of the border, and we will be impacted by them on this side.

Supervisor Roberts stated that we maintain air monitoring stations south of the border. The history of air quality improvement for the State of California is a model for the world. About 70 percent of the air quality problem is from off-road equipment. This is one component of a much larger program. There will be a process with a lot of hearings.

Mr. Brasil acknowledged that there will be substantial costs, but the need for improved air quality is great.

Ms. Keehan asked if we have an estimate of the health care costs or other improvements to our economy as a result of these new regulations. Mr. Brasil replied that they have not yet completed their research on that.

Councilmember Jerry Kern (Oceanside) asked about the wide disparity between the cost impact estimates between CARB and the construction industry. Mr. Brasil answered that if you look at the inventory, by 2020 roughly half of the vehicles will be turned over. The cost is attributable to people buying new equipment.

Councilmember Kern asked if there is an average equipment turnover rate. Mr. Brasil said that they have a useful life measurement for different types of equipment. We include that in the inventory. The Contractor cost estimate might reflect the worst case, which is only a small percentage of the inventory.

Mr. Brasil noted that a small fleet with less than 1,000 horsepower would only have to comply with the regulations for 2015 and only for PM.

Chair Madaffer indicated that there are a number of requests to speak on this item.

Mike Buckantz, with Justice and Associates/Construction Industry Air Quality Coalition, mentioned the experience of a local contractor, Perry & Shaw. This company has 175 people and has taken advantage of the Carl Moyer program. Now it has re-powered 50 of its oldest engines at a cost of $5.5 million. This was a voluntary action. The regulations established a fleet average target for NOx and PM that even proactive contractors cannot meet. Companies will have to turnover more than 10 percent of their fleets and retrofit 20 percent of them. The latest used equipment will only meet the Tier 2 requirement, and there is a very limited market for that equipment. The regulations require an equivalent of Tier 4 engines by 2015. Manufacturers are not required to produce the new engines until 2011. This doesn’t provide sufficient time to get compliant engines into the fleet. No contractor
will be able to meet these regulations. Because of the 10 percent turnover requirement for equipment that has an expected 20 to 30 year life, the equipment will have to be replaced at least once, and perhaps twice. All of the speakers believe in cleaning up the air and have demonstrated commitment to doing this early. They believe the targets are achievable, just not by the timelines set. These regulations will cost Mr. Buckantz’ company $1.5 million to $2 million per year. This will put his company out of business within three years of implementation of this regulation.

Chair Madaffer announced that this matter will go before the CARB on May 25, 2007.

Councilmember Bob Campbell (Vista) asked what time frames are achievable.

Ralph Potter, CIT Group, said that CIT has been financing contractors for 32 years. The impact of these regulations is going to be huge to the construction industry. A lot of companies will not survive, and employees will be in the unemployment line. They will not be able to finance this is to add debt. Adding debt is limited by your financial statement. Every year on a five-year financial basis you will be continually increasing debt. Lenders will not be able to advance funds. As they run out of alternatives, companies will shrink, retire, and leave the state. There is a financial limit for a business to add debt based upon their financial statement.

Mike Carcioppolo, Hawthorne Machinery, stated that they will sell new equipment but there will be a lot less customers to buy it. We don’t have solutions. Of the 600 different models in San Diego County, only 77 of them meet the Tier 1 solutions and only 4 percent meet the Tier 2 solutions. The manufacturers don’t have solutions. Going through the certification protocol takes time and money and the technology has to be approved by the Environmental Protection Agency. We have been actively involved in repowering machines. We are the largest rental fleet in San Diego, but we cannot meet the regulation’s timelines. He suggested that the timelines be pushed out.

Glen Dethloff, a surety broker representing Allen Brooke Insurance, expressed concern about the cost of this regulation and how it will affect the surety capacity that these companies need. If the pool of contractors reduces, which it will, you will have a smaller bid pool and that will bring prices up. The regulations will result in bids coming in that will reduce the bid pool by 30 to 40 percent higher during the next three years. It will cost $10 million to pay for $1 million of costs.

Dan Fauchier, EGCA, said that he has asthma, wants clean air, and appreciates the reduction in air pollution. However, with these new CARB regulations, the bonding capacity will shrink, and there will be fewer bidders. He personally took a look at 50 projects in San Diego in 2003 and 2004, the number of bidders, and how prices compared with the engineer’s estimate. There was a 23 percent cost increase on construction projects when you go from seven bidders to three bidders. And, you’re lucky if you get three.

Scott Erreca, a highway contractor in San Diego since 1955, provided an example of what the contractor looks at with regard to using its equipment value as a bonding asset. With these new regulations, instead of having an asset, the contractor will have a piece of equipment that cannot comply to Tier 2 requirements, which will make it worthless for bonding purposes.
Brad Barnum, Associated General Contractors (AGC), stated that if these regulations are implemented in this time frame, a number of construction companies will go out of business, resulting in less contractors bidding on job, which will dry up the capital improvement program. There will be an outcry from voters for the infrastructure bonds. The construction industry needs your help. He suggested that Committee members go back to their jurisdictions and take a position on this.

Mr. Carcioppolo stated that they need an additional 5 to 7 years to be able to achieve compliance with these regulations. The difference between off-road diesel equipment and cars is that no one said you would have to turn in your car or turn over your car fleet. It happened by natural attrition. That will happen in this industry as well. There needs to be time for the technology and fuel to mature.

Ms. Eidam noted that there is a strong move on the part of policy makers at the state level to expand our horizons to include environmental stakeholders. The trend is to now look at the environmental benefits of transportation projects.

Supervisor Roberts said that CARB will work with major stakeholders to ferret out the legitimate concerns and to have an effective regulation that takes into consideration the costs. He served for 12 years on the CARB, and it has a lot to show for the improved air quality. There will be a hearing on May 24 and 25, at the Marriott Hotel in Del Mar. We can take a position on this, but we need to understand what is happening at the state level. The regulation is applicable to any engine. We should continue to work with the construction industry on this before final regulations are approved. His experience is that those concerns are easy to resolve once we start talking about them.

Chair Madaffer showed sympathy toward the speakers. He said that even though contractors knew this regulation was coming along, the indication is that they need more time. Perhaps this negotiation period will result in a mutually agreeable time period.

**Action:** This item was presented for information only.

**10. BUDGET INCREASE TO AUTOMATED FARE COLLECTION PROJECT (RECOMMEND)**

James Dreisbach-Towle, Integrated Transportation Systems Administrator, provided a report on the automated fare collection project, focusing on project goals, scope, and duration. He said that we are looking for simplification and ease of use for transit patrons and to improve transit information and collection. We will collect information about passengers so that we can better plan services for them. The project scope is made up of multiple contractors for the bus and the overall fare system for smart cards. There will be three project phases: Phase 1 will be implementation of smart cards for North County Transit District (NCTD); Phase 2 is fare media for the trolley; and Phase 3 is for contract bus services. We currently have over 200 fare products in use in San Diego. We will outfit code enforcement and conductors with an inspection device for valid pass or fare. There will be ticket office terminals at transit stores for the Metropolitan Transit System (MTS) and NCTD. Passenger will be able to purchase smart passes as well as load additional money onto them from a variety of sources. He reviewed the project schedule. We will conduct a series of pilot programs with employees and the public on the rail equipment. If everything goes well, there will be a public launch and a phase-out of the monthly paper passes.
Mr. Dreisbach-Towle described the budget increase request and noted that a financial plan has been developed for a comprehensive program. There are two funding strategies: $700,000 of the $3.5 million budget increase is from bond interest and the remaining $2.8 million would come from the State Transportation Improvement Program (STIP) Augmentation.

Deputy Mayor Druker commented that this is an extremely important project.

**Action:** Upon a motion by Councilmember Emery and a second by Deputy Mayor Druker, the Transportation Committee recommended that the SANDAG Board of Directors approve a $3.5 million budget increase to the Automated Fare Collection project, also known as the Compass Card (smart card) project.

11. **TransNet AND TDA FY 2006 AUDIT STATUS (APPROVE)**

Renée Wasmund, Director of Finance, reported that Policy No. 31 requires all audits be completed by March 31. We have one outstanding Caltrans audit, and it is expected to be complete by April 30. The Transportation Committee can approve a time extension for the Caltrans TransNet audit. If the audit is not completed in time, Caltrans can request another extension; if another extension is not approved, then no additional funding will be released until the audit is completed.

**Action:** Upon a motion by Councilmember Emery and a second by Deputy Mayor Druker, the Transportation Committee approved a TransNet audit extension for Caltrans through April 30, 2007. This action would allow Caltrans to continue to receive TransNet funds up until the extension date. If the audit is not completed by the approved extension date, Caltrans would not receive any additional TransNet funds until the audit is completed or the Transportation Committee approves another extension.

12. **SPRINTER PROJECT STATUS REPORT AND SANDAG INDEPENDENT ASSESSMENT (INFORMATION)**

This item was postponed to the next Committee meeting.

13. **LIM-Rail™ TECHNOLOGY DEMONSTRATION PROJECT (DISCUSSION/POSSIBLE ACTION)**

This item was postponed to the next Committee meeting.

14. **UPCOMING MEETINGS**

The next meeting of the Transportation Committee is scheduled for Friday, April 6, 2007, at 9 a.m.

15. **ADJOURNMENT**

Vice Chair Jack Dale adjourned the meeting at 11:59 a.m.

Attachment: Attendance Sheet
<table>
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<th>GEOGRAPHICAL AREA/ORGANIZATION</th>
<th>JURISDICTION</th>
<th>NAME</th>
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<td>Albert Phoenix</td>
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Introduction

The 2030 Regional Transportation Plan (RTP), MOBILITY 2030, envisions improving regional transit service to make public transit the first choice for many trips. To realize this vision, the RTP recognizes that transit improvements need to be integrated into local communities, and focused in areas with compatible land uses that support an efficient transit system.

SANDAG is responsible for working with local jurisdictions and other agencies to coordinate land use and transit planning. Through existing development review processes, SANDAG staff reviews local development proposals and, where appropriate, recommends improvements to benefit the physical environment for transit. This report provides a list and cost estimates for the transit facilities and accommodations secured through the development review process for the period July 2006 through December 2006 (Attachment 1). These facilities and accommodations have been implemented at no cost to SANDAG or the transit agencies. The Transit Development Review report is provided to the Transportation Committee on a biannual basis.

Discussion

SANDAG staff reviewed a total of 250 development projects from local jurisdictions and other agencies in San Diego County during the second half of calendar year 2006. By submitting comments through each agency’s development review process, SANDAG worked with local jurisdictions to incorporate transit facilities and transit-supportive designs into 41 projects which resulted in 311 improvements. The remaining 209 projects reviewed had no direct relationship to the regional transit system due to the nature of the project or because the project was not near any existing or planned transit lines. The types of transit improvements, estimated value, and direct financial benefits secured during the year are summarized in Table 1 below:

<table>
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<th>Types of Improvements</th>
<th>Total No.</th>
<th>Value per Item</th>
<th>Direct Benefit</th>
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<td>Improved Bus Stops (ADA Compliance)</td>
<td>24</td>
<td>$5,000</td>
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<td>Pedestrian Connections and Accessibility</td>
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<td>New Shelters</td>
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<td>New Trash Receptacles</td>
<td>27</td>
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<td>Bus Turnouts/In Street Concrete Pad</td>
<td>10</td>
<td>$25,000</td>
<td>$250,000</td>
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<tr>
<td>Bike Racks</td>
<td>193</td>
<td>$400</td>
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<td><strong>Total</strong></td>
<td></td>
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<td><strong>$873,450</strong></td>
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In addition to improving the transit passenger and pedestrian environment, this program results in direct financial benefits. As summarized in Table 1 above, during the period covered by this report, contributions to the regional transit system are estimated at $873,450.

Bringing existing bus stops up to the Americans with Disabilities Act (ADA) standards, and securing new bus stops and landing pads are among the most common types of improvements with financial benefits. Many of the new bus stops are in newly developing areas where future demand for transit services is anticipated, or in areas that currently do not have adequate bus stops. Without the facilities and accommodations secured through the development review process, the costs for these transit improvements would otherwise be borne by the transit agencies.

**Conclusion**

In conclusion, the role that SANDAG plays in the development review process throughout the region is an effective tool for promoting transit and land use integration. Short range improvements in bus stops and pedestrian accessibility take place at a scale that improves the transit customer’s experience and helps achieve the regionwide goal of improving regional transit service. Early participation in the review process for large developments ensures that transit will be included as a critical part of the region’s transportation system.

BOB LEITER
Director of Land Use and Transportation Planning

Attachment: 1. Development Projects Contributing Transit-Related Improvements for July 2006 through December 2006

Key Staff Contact: Chris Kluth, (619) 699-1952, ckl@sandag.org
## Development Projects Contributing Transit-Related Improvements for July 2006 through December 2006

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<th>Encinitas</th>
<th>Escondido</th>
<th>Oceanside</th>
<th>San Diego</th>
<th>San Marcos</th>
<th>Solana Beach</th>
<th>Vista</th>
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<td>Pedestrian Connection and Accessibility</td>
<td>New Bus Stops and Passenger Landings</td>
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TRANSPORTATION DEVELOPMENT ACT CLAIM AMENDMENT

**Introduction**

At the November 17, 2006, meeting, the SANDAG Board of Directors approved the FY 2007 Transportation Development Act (TDA) allocation and claim for Full Access for Coordinated Transportation (FACT), acting as the Coordinated Transportation Services Agency (CTSA). The initial claim of $87,098 omitted certain operating costs from its budget. As a result, FACT requests an additional $8,000. There are sufficient funds remaining from the original TDA allocation to meet this request.

**Discussion**

State law allows for the formation of a regional agency to coordinate social service agency transportation programs. FACT fulfills this role and is funded under TDA Article 4.5 Community Transit Services. As the CTSA, FACT is eligible to receive up to 2 percent of the funds apportioned under this Article. The mission of FACT is to expand the availability and economic utilization of specialized transportation services for seniors and disabled individuals. FACT is a conduit of information and assists the nonprofit sector with the coordination of specialized transportation programs and improving the management of these programs by providing free training and technical assistance.

For FY 2007, $112,881 is available. FACT previously claimed $87,098 in November; this request would increase the total claim to $95,098 leaving a balance of $17,783. The FACT Board of Directors approved the request for the additional funds at its meeting on March 14, 2007.

**Recommendation**

The Transportation Committee is asked to adopt Resolution No. 2007-22 approving the revised TDA claim for FACT (Attachment 1).

RENÉE WASMUND
Director of Finance

Attachment: 1. Resolution No. 2007-22, Approving the Allocation of FY 2007 Transportation Development Act Funds Article 4.5 Community Transit Service

Key Staff Contact: Sookyung Kim, (619) 699-6909, ski@sandag.org
RESOLUTION NO. 2007-22

APPROVING THE ALLOCATION OF
FY 2007 TRANSPORTATION DEVELOPMENT ACT FUNDS
ARTICLE 4.5 COMMUNITY TRANSIT SERVICE

WHEREAS, the Transportation Development Act (TDA) claimant listed below has submitted a claim for FY 2007 TDA funds pursuant to Chapter 4, Article 4.5, of the California Public Utilities Code (PUC); and

WHEREAS, pursuant to Section 29532 of the California Government Code (CGC), the San Diego Association of Governments (SANDAG) has analyzed the claims and determined that the claims conform substantially to the provisions of the TDA of 1971, as amended, including the provision of PUC 99275.5; and

WHEREAS, SANDAG finds this claim for FY 2007 to be in conformance with the Regional Transportation Plan; NOW THEREFORE

BE IT RESOLVED by the SANDAG Board of Directors as follows:

1. That the Board of Directors, pursuant to CGC 29532, does hereby approve the additional allocation of $8,000 in TDA funds to FACT (Full Access to Coordinated Transportation) for FY 2007 operating costs:

<table>
<thead>
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<th>Claim No.</th>
<th>Original Allocation</th>
<th>Revised Allocation</th>
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<tbody>
<tr>
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<td>$95,098</td>
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</table>

2. That these claims are approved subject to receipt by SANDAG of an executed service contract for FY 2007 and documentation of governing board approval of the claim.

3. That the Board does hereby authorize the Executive Director to prepare and transmit allocation instructions and payment schedules to the San Diego County Auditor as are necessary and legal for payment of these claims.

PASSED AND ADOPTED this 6th day of April 2007.

__________________________           ATTEST: __________________________
CHAIRPERSON                   SECRETARY

MEMBER AGENCIES: Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista, and County of San Diego.

ADVISORY MEMBERS: California Department of Transportation, Metropolitan Transit System, North County Transit District, Imperial County, U.S. Department of Defense, San Diego Unified Port District, San Diego County Water Authority, and Mexico.
BUDGET TRANSFER FOR LRT STATION SHELTER REPLACEMENT PROJECT
File Numbers 1074000, 1115100

Introduction

The reconstruction of the Cesar E. Chavez/25th & Commercial Trolley Station was performed as part of the Light Rail Transit (LRT) Station Shelter Replacement Project. The work is complete, and additional funds will pay for final quantities, flagging, administration, and construction management, and allow this contract to be closed out. It is proposed that these funds come from the Metropolitan Transit System (MTS) Capital Needs Assessment Project. The transfer was approved by the MTS Board on March 8, 2007.

Recommendation

The Transportation Committee is asked to approve a transfer of $90,000 from the MTS Capital Needs Assessment Project to the LRT Station Shelter Replacement Project thus increasing the project budget to $896,716.

Discussion

The Cesar E. Chavez/25th & Commercial Trolley Station Improvement Project is the second phase of the LRT Station Shelter Replacement project. This project phase provided lighting enhancements, station shelters, and added seating to the 25th and Commercial Trolley Station. These improvements increased safety and protection from the weather, and aesthetically enhanced the overall look of the station, providing a more enjoyable experience to the transit patrons. To close out this project, $90,000 in additional funding is needed for the following: bid item and contract change order adjustments; flagging costs; as-built costs; and additional construction management and administration support costs. The $90,000 would come from the Capital Needs Assessment Project, which was originally funded to review and establish an inventory and assessment of MTS capital assets and their condition and prioritize replacement needs. MTS and San Diego Trolley, Inc. (SDTI) have largely completed this task in-house for major assets and are working with SANDAG on TransNet and bond funding to prioritize and fund work on high-priority capital deficiencies. This action would reduce the original project budget for the Capital Needs Assessment Project from $190,000 to $100,000.

In addition to the $90,000, $24,667 was previously approved by the Transportation Committee on September 1, 2006, to settle a contractor’s claim for extended overhead costs resulting from contract change orders that extended the contract completion. The cumulative total increase of $114,667 exceeds the Executive Director’s authority and requires Transportation Committee approval.

JACK BODA
Director of Mobility Management and Implementation

Key Staff Contact: Peter d’Ablaing, (619) 699-906, pda@sandag.org
SPRINTER PROJECT STATUS REPORT AND SANDAG INDEPENDENT ASSESSMENT

Introduction

The North County Transit District (NCTD) SPRINTER Rail Project converts an existing 22-mile freight rail corridor into a Diesel Multiple Unit (DMU) transit system connecting Oceanside, Vista, unincorporated County areas, San Marcos, and Escondido. The SPRINTER is a TransNet 1 funded project. In response to requests from NCTD and the Federal Transit Administration (FTA), SANDAG staff is currently providing support and oversight services for the project and has been asked by the SANDAG Board of Directors to report on its progress monthly to the Transportation Committee.

Discussion

Current Progress

SPRINTER project construction is rapidly approaching completion on several of the major contracts. On the Mainline contract, nearly 20 miles of the 32 miles of total track construction have been completed, and partial construction has occurred on several more miles. Significant mainline work includes completing 33 of 36 grade crossings, fencing installation throughout the right-of-way, completing the Buena Creek Bridge, and increasing emphasis on the communication and signal systems installation. Nearly all platforms at the 15 stations have been formed and poured, and station canopy columns are visible at many locations. Work to repair the Rancho Del Oro landslide will be complete this month.

All of the staffing augmentation changes recommended by the FTA have been completed. SANDAG is continuing to provide a project controls oversight role through its Director of Engineering and Construction, and also has two full-time staff engineers assigned to the project, in addition to NCTD project staff and consultants.

Schedule

Overall, the four contracts are 78 percent complete as of the end of February based on billings to date. The California State University, San Marcos (CSUSM) Loop contract is 90 percent complete; the remaining work will not impact the overall project critical path. The Mainline contractor continues to install track on the Loop, as called for in the contract documents. The Vehicle Maintenance facility at 97 percent is substantially complete except for minor remaining change order work with beneficial occupancy expected this month.

All 12 of DMU vehicles are on the property. Brake testing will start the first week of April. Three vehicles have received preliminary acceptance.
As reported in previous months, the signal and communication systems work is the critical element in determining the final completion of construction and the start of revenue service. The critical path schedule shows revenue operations date (ROD) no earlier than January 2008. The contractor has taken positive steps to accelerate its work in order to meet a December 2007 ROD. Examples include taking early delivery of the field communication cabinets and the addition of three new work crews. The next two to three months are critical. If the progress continues to improve either through deployment of additional workers or more efficient use of their current workforce, a December ROD is achievable. If these improvements are not made, a December ROD is at risk. We will continue to monitor this very closely.

Cost

The NCTD estimate at completion (EAC) is $448.1 million compared to $447.7 last month. The majority of the increase is from earthwork on the Mainline contract. Due to the inefficiencies caused by the many redesigns and large amounts of unsuitable native materials, the contractor hauled off significant quantities of excess dirt that was originally intended to be used on site.

The designer’s costs are 12 percent under the recovery plan budget set last fall. The construction management costs are slightly above the current plan due to help that is being provided to NCTD in the resolution of the outstanding change orders.

Cumulatively, for all four contracts, approved change orders stand at 7.4 percent of work completed and billed to date, or 5.8 percent when reimbursable items are excluded. Note that the “not-to-exceed” budget included in the amended recovery plan for the FTA is $484.2 million.

Inland Rail Trail

The Inland Rail Trail (IRT) is being constructed concurrently with the SPRINTER Project by the Mainline contractor. Although the IRT has its own budget and funding, it was not until recently that a robust process was put in place to identify all construction costs that should be charged to the IRT. The IRT is nearly complete and it appears its share of the construction is under-funded by at least $3.5 million. NCTD and SANDAG staffs are investigating options to fund this balance.

Project Concerns

In order to meet a December 2007 ROD, systems work must continue to be the focus of both NCTD and the Mainline contractor. The schedule does not have free time or “float” to handle unforeseen problems that may delay the systems work. The additional work crews dedicated to systems work will help this effort.

In order to ensure that work critical to a December ROD is being given the highest priority, NCTD should create a new schedule that fixes the opening day and backs in key milestones that need to be achieved from today forward.

Traffic signals at grade crossings are being modified from east to west along the corridor. Advanced notice and outreach to each city should be done to ensure close coordination and cooperation so not to delay the full speed testing of the vehicles.
In order to better predict final project costs, NCTD should take the following steps:

1. Create a core management team that tracks all costs each month to ensure all costs are being accounted for.

2. Revisit the assumptions made during the creation of the Amended Recovery Plan budget last fall to ensure they are still appropriate.

3. Aggressively work toward separating Inland Rail Trail costs from Mainline costs.

4. Aggressively work to determine the final construction quantities of the major elements of work.

JACK BODA
Director of Mobility Management and Project Implementation

Key Staff Contact: Jim Linthicum, (619) 699-1970, jlin@sandag.org
REPORT ON REGIONAL TRANSIT PERFORMANCE MONITORING SYSTEM

Introduction

SANDAG Board Policy No. 018 establishes a requirement for a quarterly evaluation of the transit performance for both the Metropolitan Transit System (MTS) and North County Transit District (NCTD) operations. In response to this requirement, SANDAG staff has worked with MTS and NCTD staff to develop a system that will provide quarterly monitoring reports regarding transit system performance. This agenda item describes the methodology that has been established for preparation of these reports and includes a baseline report on performance results for the first quarter of FY 2007. In the future, transit performance reports will be brought to the Transportation Committee on a quarterly basis.

Six performance indicators are evaluated, which is consistent with the annual performance measures required by the California Transportation Development Act (TDA). In addition, a composite index of the six TDA indicators has been developed to provide an overall indicator of transit performance. A more detailed report is included as Attachment 1.

Discussion

Overview of Performance Monitoring System

Quarterly evaluation of transit operations is an important tool to help understand the underlying trends in service performance, seasonal variations, and impacts of service changes. The six TDA indicators that will be monitored are outlined below, along with the purpose of the indicator:

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

A composite index of the six TDA indicators will also be used to provide a summary of the overall system performance (an index of this type has been used previously in the San Diego region).

These performance indicators will be measured separately for the various types of services provided in the region, including: fixed-route services (MTS Trolley, NCTD COASTER, MTS Bus, and NCTD...
Breeze bus); demand responsive services (MTS Direct Access to Regional Transit [DART] and NCTD Fast and Simple Transportation [FAST]); and Americans with Disabilities Act (ADA) paratransit services (MTS ADA and NCTD ADA).

Since many of the indicators will often vary from one year to the next due to fluctuations in fuel prices, service changes, etc., a three-year evaluation time frame will be used in order to identify longer-term trends, both positive and negative, and understand the reasons for the changes.

SANDAG has a Regional Short-Range Transit Planning Working Group made up of SANDAG, MTS, and NCTD staff that serves as the regional Productivity Improvement Committee. It meets to discuss steps to improve the productivity of the regional transit system. This committee worked with SANDAG staff to develop the methodology to be used in the preparation of these reports. The quarterly performance report will be discussed at these meetings and strategies identified, as necessary, to reverse any negative trends, prior to the results being reported to the Transportation Committee.

**FY 07 First Quarter Report - Composite Index**

For the composite index of the six performance indicators, the overall three-year trend data for fixed-route services show improvement in MTS Trolley performance, while performance for the three other fixed-route services (MTS Bus, NCTD Breeze, and NCTD COASTER) have slightly declined. The following information details these changes and potential reasons for the changes:

- **MTS Trolley** - overall performance experienced an overall improvement of 2 percent over the three-year evaluation period with trends climbing upward in the first quarter of Fiscal Year 2007. Improved Trolley performance has resulted from increased passenger volumes outpacing increases in operating costs. Typically, trolley performance peaks during the first quarter (July through September), due to a combination of special events, tourism, and San Diego Padres and Chargers games. However, a new passenger record was set during the first quarter of FY 2007, while operating costs remained relatively stable.

- **MTS Bus** - overall performance declined by 2 percent over the last three years. This slight decline in bus service performance is partially attributable to declining fare revenues and relatively stagnant ridership. However, benefits from the recent Comprehensive Operations Analysis (COA) implementation have not yet been realized in the available data but will be reflected in future quarterly reports.

- **NCTD Breeze** - overall performance decreased by 1 percent during the last three years. This slight downward trend is attributable to ridership decreases, while revenue hours and revenue miles have increased. However, the benefits from FY 2007 fare and route adjustments have not yet been reflected in the performance data.

- **NCTD COASTER** - overall performance experienced a 1 percent decline that is related to increases in operating costs (due primarily to rises in fuel costs) and increased revenue hours that have outpaced increased ridership.
Overall performance for demand responsive and ADA services exhibited somewhat more negative trends for both MTS and NCTD over the past three-year period, compared with fixed-route services, as summarized below:

- MTS DART service was substantially reduced after Fiscal Year 2004 to eliminate inefficient services. Not surprisingly, overall performance has trended downward by 5 percent, due to large declines in fare revenues and passengers that outpaced declines in operating costs.

- NCTD FAST service was slightly cut back over the evaluation period. As a result, the overall performance experienced a 2 percent decline, due mainly to decreased passenger volumes outpacing reductions in operating costs.

- MTS ADA service overall performance decreased by 6 percent due to relatively stagnant fare revenues and number of passengers. In addition, reductions in revenue hours per employee contributed to the decline.

- NCTD ADA service experienced an overall decline in composite performance of 14 percent over the evaluation period. After exhibiting positive trends in Fiscal Year 2006, this service experienced a reduction in performance over the past two quarters yielding the negative trend. During this time period, NCTD faced accelerated operating costs while increases in passenger volumes were relatively minor.

**Individual Performance Indicator Results**

An evaluation of the individual performance measures shows a number of positive trends in several areas:

- MTS Bus improvements in operating cost per passenger, operating cost per revenue hour, and passengers per revenue mile
- MTS Trolley improvements in operating cost per passenger, operating cost per revenue hour, passengers per revenue hour, passengers per revenue mile, and revenue hours per employee
- MTS DART improvements in passengers per revenue hour and passengers per revenue mile
- MTS ADA improvements in operating cost per passenger, passengers per revenue hour, and passengers per revenue mile
- NCTD Breeze improvements in operating cost per revenue hour
- NCTD COASTER improvements in operating cost per revenue hour and passengers per revenue mile
- NCTD FAST improvements in operating cost per revenue hour and passengers per revenue mile
- NCTD ADA improvements in passengers per revenue hour and farebox recovery ratio
Future Reporting

The Transportation Committee will receive future TDA quarterly reports on the following schedule:

- Quarter 2 FY 2007: June 1, 2007 meeting
- Quarter 3 FY 2007: September 7, 2007 meeting
- Quarter 4 FY 2007: December 7, 2007 meeting
- Quarter 1 FY 2008: March 7, 2008 meeting

BOB LEITER
Director of Land Use and Transportation Planning

Attachment: 1. Transportation Development Act Quarterly Performance Monitoring Report: Fiscal Year 2007 Quarter 1

Key Staff Contact: Dan Levy, (619) 699-6942, dle@sandag.org
Regional Transit
Performance Monitoring System
and First Quarter FY 07 Performance Results

1 INTRODUCTION

The Transportation Development Act (TDA) of California requires that SANDAG, as the Regional Transportation Planning Agency (RTPA), monitor the performance of each transit agency to determine if the agency has made a reasonable effort to improve performance. In order to fulfill this obligation, SANDAG Policy No. 018 states that SANDAG will monitor “transit system performance on a system wide and transit agency level on an annual and quarterly basis.” This quarterly report is intended to meet this mandate and is based on the same performance indicators required by the TDA.

1.1 Objective

The objective of summarizing quarterly performance data is to provide a trend analysis of key transit performance indicators over the course of three years in order to gauge the impacts of transit service changes (e.g., fare, operating cost, or service changes). The specific TDA operational and cost indicators monitored for the purposes of the quarterly evaluation process, along with the purpose of each indicator are:

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

A composite index\(^1\) of the six TDA performance measures was also developed to determine overall trends for each of the evaluated services (Metropolitan Transit System [MTS] Bus, MTS Direct Access to Regional Transit [DART], MTS Americans with Disabilities Act [ADA] paratransit, MTS Trolley, North County Transit District [NCTD] Breeze, NCTD Fast and Simple Transportation [FAST], NCTD ADA paratransit, and NCTD COASTER). The index is based on a 100 point scale in order to enable any changes to be shown as a change in percentage (e.g., an index of 106 would translate to an increase in performance of 6 percent).

1.2 Use of Data

The quarterly reports prepared by SANDAG will be used to assist in development of the annual Performance Improvement Program. The reports will be analyzed and discussed in the tri-agency Regional Short-Range Transit Planning Task Force that serves as the regional Productivity Improvement Committee and discusses steps to improve the productivity of the regional transit system and to reverse any negative trends.

\(^1\) The inverse of the operating cost performance measures were applied to the index to ensure that improvements equated scaled increases. Without the inverse application, any decrease in operating costs would be shown as a negative result.
2.0 SYSTEM MEASUREMENT

The data used to calculate performance based on TDA measures will continue to be based on actual operating results and passenger counts produced from farebox data. The indicators are measured separately for MTS and NCTD over a three-year period. The analysis of trends prior to 2004 is of limited value, as changes that occurred at MTS when it absorbed the County Transit System (CTS) have reduced the comparability of longer term data. The evaluation of MTS services is organized into four categories: Bus, Trolley, DART, and ADA Paratransit. The NCTD evaluation is separated into four categories: Breeze Bus, COASTER, FAST, and ADA Paratransit. In the future, Sprinter data will also be shown separately.

2.1 TDA Performance Measure 1: Operating Cost Per Passenger

Measurement: Cost-Effectiveness

Operating cost per passenger is derived by dividing the total operating cost by the total number of passenger boardings. A reduction in operating cost per passenger represents an improvement in this category and therefore an improvement in cost-effectiveness. Operating costs per passenger have been adjusted for inflation using the Consumer Price Index (CPI) Transportation data series specific to the San Diego region. By incorporating the CPI, no comparisons need to be drawn between performance and inflation.

2.2 TDA Performance Measure 2: Operating Cost Per Revenue Hour

Measurement: Cost Efficiency

Operating cost per revenue hour is obtained by dividing the total operating cost by the total number of revenue hours. A reduction in operating cost per revenue hour represents an improvement in this category and therefore an improvement in cost efficiency. Operating costs per revenue hour have been adjusted for inflation using the CPI Transportation data series specific to the San Diego region. By incorporating the CPI, no comparisons need to be drawn between performance and inflation.

2.3 TDA Performance Measure 3: Passengers Per Revenue Hour

Measurement: Service Productivity

This measure is the first of two service productivity measures, which are calculated by dividing total passenger boardings by total revenue hours. An increase in passengers per revenue hour represents an improvement in this indicator with quarterly changes resulting from differences in passengers or revenue hours or from a combination of both.

2.4 TDA Performance Measure 4: Passengers Per Revenue Mile

Measurement: Service Productivity

This measure is the second of two service productivity measures, which are calculated by dividing total passenger boardings by total revenue miles. An increase in passengers per revenue mile

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2 The transportation specific inflation factors include costs relating to the purchasing of new vehicles, gasoline prices, tire prices and taxes that are directly associated with the costs of providing transportation.
represents an improvement in this category. Quarterly changes may result from differences in either total passengers or revenue miles or a combination of both.

2.5 TDA Performance Measure 5: Revenue Hours Per Employee

**Measurement: Labor Productivity**

Revenue hours per employee represent a labor productivity evaluation measure and are calculated by dividing total revenue hours by the number of full-time equivalent employees. An increase in revenue hours per employee represents an improvement in this category. Quarterly changes may result from individual differences in revenue hours or number of employees or a combination of both.

2.6 TDA Performance Measure 6: Farebox Recovery Ratio

**Measurement: Service Cost Efficiency**

The final performance measure, farebox recovery ratio, is a measure of service cost efficiency and is calculated by dividing total fare revenue by the total operating costs. An increase in the farebox recovery ratio represents an improvement in this category. Quarterly changes may result from differences in fares received or of operating costs or from a combination of both.

3.0 1st Quarter FY 2007 Transit Performance Results

Detailed graphs showing three-year trends over the past three years (1st Quarter FY 2004 through 1st Quarter FY 2007) for the six TDA performance measures discussed below are included at the end of this report as Figures 1-6. These graphs use logarithmic scales. By using the logarithm of a value rather than the value itself, the logarithms reduce the presentation to a more manageable range and enable the comparison of multiple (and diverse) sets of data onto one graph.

3.1 TDA Performance Measure 1: Operating Cost Per Passenger

Operating costs per passenger have increased for most services in the NCTD area, while operating costs per passenger in the MTS service area have generally improved over the past three years. Trolley improvements in cost-effectiveness were mainly due to a substantial increase in the number of passengers over the immediate past quarter, which was enhanced by relatively stable operating costs over the past three years. MTS Bus improvements were derived from increased passengers and decreased operating costs when scaled for inflation. On the other hand, MTS DART services experienced the largest increase in operating costs per passenger over the three-year evaluation period with an increase of 28 percent, while NCTD ADA service also experienced elevated costs in this category by 26 percent. Other costs increases for NCTD services were marginal and ranged between 2 and 5 percent, which can be attributed to general increases in fuel and insurance costs. A graph showing the three-year trends in this performance measure is provided as Figure 1.

3.2 TDA Performance Measure 2: Operating Cost Per Revenue Hour

The quarterly evaluation reveals that for most services, operating costs per revenue hour have decreased over the past three years. NCTD FAST and COASTER services posted the largest three-year improvements in this category by 7 and 8 percent, respectively. On the other hand, MTS DART and NCTD ADA experienced the largest cost increases in this category by 37 and 33 percent, respectively. For MTS DART, this decline was due to revenue hour reductions outpacing reductions in operating costs. For NCTD ADA service, the decline was due to significant increases in operating costs (such as
fuel and insurance) compared to relatively stable revenue hours. A graph showing the three-year trends in this performance measure is provided as Figure 2.

3.3 **TDA Performance Measure 3: Passengers Per Revenue Hour**

Passenger per revenue hour performance trends over the three-year evaluation period reveal general differences between MTS and NCTD services. MTS Trolley, DART, and ADA services posted a three-year improvement under this performance measure, while NCTD services generally experienced slight declines. One notable exception was the improvement in NCTD ADA service, which saw passengers per revenue hour increase by 6 percent over the previous three years. The best performing service in this category was MTS ADA service, which improved by 15 percent, while the COASTER service decreased by 12 percent as additional revenue hours outpaced increased passenger volumes. A graph showing the three-year trends in this performance measure is provided as Figure 3.

3.4 **TDA Performance Measure 4: Passengers Per Revenue Mile**

As was the case under the previous performance measure, the results of the passengers per revenue mile evaluation vary between the two transit agency services. MTS services again show improvements in this category, while NCTD services generally exhibit slight declines with the exception of NCTD FAST service, which experienced a slight gain. The largest of the MTS service improvements comes from the Trolley, which experienced a 13 percent increase in passengers per revenue mile over the last three years. The reasons for the NCTD service reduction in performance under this category vary. NCTD Breeze service, with a 6 percent reduction in this category, has experienced increases in revenue miles without corresponding increases in passengers. On the other hand, NCTD ADA service has experienced increases in both revenue miles and passengers, but with revenue miles increasing at a faster rate. A graph showing the three-year trends in this performance measure is provided as Figure 4.

3.5 **TDA Performance Measure 5: Revenue Hours Per Employee**

The evaluation of revenue hours per employee yielded general declines for all of the transit services. However, the Trolley was one notable exception, with this service experiencing a 2 percent increase in revenue hours per employee over the three-year evaluation period. On the other hand, both ADA services (MTS and NCTD) experienced the largest reduction in revenue hours per employee at 24 and 21 percent. These declines were due to increases in the number of employees without corresponding increases in revenue hours. A graph showing the three-year trends in this performance measure is provided as Figure 5.

3.6 **TDA Performance Measure 6: Farebox Recovery Ratio**

In order to qualify for TDA funds, operators must maintain a certain farebox recovery ratio as specified by the TDA “Statutes and California Codes of Regulation.” The TDA also includes a provision that regular transit (including general public dial-a-ride, but excluding ADA Paratransit) be combined for this evaluation. This combination represents a slightly different analysis method than what was conducted for the previous five performance measures. As such, the required farebox recovery ratios for MTS and NCTD services are: 32 percent for MTS non-ADA services; 18 percent for NCTD non-ADA services; and 10 percent for MTS and NCTD ADA services.

Over the past three years, all of the services have exceeded the minimum TDA farebox recovery requirements. On the other hand, the three-year trend analysis reveals that all services are
exhibiting slight downward trends from the beginning of the analysis period in FY 2004. However, NCTD ADA provides the lone exception to this trend with an improvement in farebox recovery performance of nearly 2 percent. A graph showing the three-year trends in this performance measure is provided as Figure 6.

3.7 Results by Transit Service Type

It is also useful to look at service performance broken out by service type – fixed route and demand responsive/ADA paratransit.

**Fixed-Route Service**

The overall three-year trend data suggests that MTS Trolley composite index performance has improved over the three-year evaluation period, while the composite performance of the other three fixed-route services (MTS Bus, NCTD Breeze, and NCTD COASTER) has slightly declined. The following information details these changes and potential reasons for the improvements or declines.

MTS Trolley service experienced an overall composite performance improvement of 2 percent over the three-year evaluation period with trends climbing upward in the first quarter of Fiscal Year 2007. Improved Trolley performance can be attributed to increased passenger volumes outpacing increased operating costs. Typically, trolley performance peaks during the first quarter (July through September), due to a combination of special events, tourism, and San Diego Padres and Chargers games. However, a new passenger record was set during the first quarter of FY 2007, while operating costs remained relatively stable.

MTS Bus composite performance declined by 2 percent over the last three years. This slight decline in bus service performance is partially attributable to declining fare revenues (3 percent) and relatively stagnant passenger volumes (1 percent). However, benefits from the recent Comprehensive Operations Analysis (COA) implementation have not yet been realized in the available data but will be analyzed in future quarterly reports and when full implementation of the COA takes place.

NCTD Breeze composite performance declined by 1 percent over the last three years. This slight decline can be attributed to passenger reductions, while employees, revenue hours, and revenue miles have increased. However, the benefits from FY 2007 fare and route adjustments have not yet been reflected in the current available data.

NCTD COASTER composite performance experienced a 1 percent decline, which can be related to large increases in operating costs (such as increases in fuel costs) and rising revenue hours which have outpaced increased passenger volumes.

**Demand Responsive and ADA service**

Overall performance shown in the composite index for demand responsive and ADA service exhibited slightly more negative trends for the two operators over their fixed-route counterparts:

MTS DART composite performance trended downward by 5 percent, due to large declines in fare revenues and passengers which outpaced declines in operating costs.
NCTD FAST composite performance experienced a minor 2 percent negative trend over the evaluation period, mainly based on decreased passenger volumes outpacing reductions in operating costs.

MTS ADA composite performance decreased by 6 percent, due to relatively stagnant fare revenues and numbers of passengers. In addition, reductions in revenue hours per employee contributed to the decline.

NCTD ADA service experienced a decline in composite performance of 14 percent over the evaluation period. After exhibiting positive trends in Fiscal Year 2006, this service experienced a reduction in performance over the past two quarters yielding the negative trend. During this time period, NCTD faced accelerated operating costs while increases in passenger volumes were relatively minor.
Figure 1: Operating Cost per Passenger, FY04, FY05, and FY06 (Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation

Figure 2: Operating Costs per Revenue Hour, FY04, FY05, and FY06 (Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation
Introduction

Since 1993, the State of California has authorized the study of an intercity, high-speed passenger rail system that will connect the state’s metropolitan areas including San Diego (Attachment 1). The California High-Speed Rail Authority (CHSRA) is the statewide agency charged with the planning and construction of this system.

To address the planning activities related to the proposed high-speed rail system and how they relate to San Diego, SANDAG established the Regional High-Speed Rail Task Force in 1999. Members included representatives from the Transportation Committee, North County Transit District, Metropolitan Transit System, the Centre City Development Corporation, Department of Defense, and elected officials from the coastal and Interstate 15 (I-15) communities. In May 2005, with the concurrence of the Task Force, the SANDAG Executive Committee approved the transfer of responsibility for monitoring these efforts to the Transportation Committee through quarterly updates, provided that Task Force members be notified of these quarterly updates, that high-speed rail be incorporated into the update of the Regional Transportation Plan, and that SANDAG keep open the possibility of reactivating the Task Force should activity warrant it.

A brief video on the proposed system will be shown at the meeting.

Discussion

Ridership and Revenue Forecasting Study

The CHSRA, in partnership with the Metropolitan Transportation Commission, recently completed an extensive update of high-speed passenger rail ridership and revenue. The study forecasts a total of 2.5 million daily high-speed passenger rail trips by 2030, of which 15 percent, or 367,000 daily trips, are forecast between San Diego and Los Angeles. This trip can be made in less than one hour along the region’s future I-15 high-speed corridor.

Regional Environmental/Engineering Work

The approved FY 2007 state budget includes $14.3 million for the CHSRA to begin project implementation. As a result, the CHSRA has contracted with Parsons Brinckerhoff to provide program management for the statewide system and additional qualified firms to begin preliminary engineering and environmental work on six segments of the high-speed train network, including the Los Angeles to San Diego (via Inland Empire) segment. Specific tasks will include preliminary engineering and environmental impact analysis of the high-speed train (HST) route and facilities, and project-level, site-specific environmental documents.
Feasibility Study of I-15 Commuter Rail Service

SANDAG staff is participating in a feasibility study of commuter rail options along the I-15 Corridor from Riverside County to downtown San Diego at the request of the project sponsor, the Riverside County Transportation Commission (RCTC). The study focuses on using the alignment developed by the CHSRA for either: (1) Metrolink-type commuter rail service, or (2) high-speed commuter rail service sharing the track with the intercity HST service. RCTC began this study in early September 2006 and has formed a Technical Advisory Committee, including SANDAG, corridor cities, and transit agencies, to comment on this study. To date, analysis on the Riverside County rail extensions has been completed, with work on the Temecula to downtown San Diego corridor expected by June 2007.

Other SANDAG Work Related to High-Speed Rail

In 2006, SANDAG completed a feasibility study of Maglev (magnetic levitation) high-speed train technology along an east-west alignment to a proposed regional airport site in Imperial County, utilizing earmarked federal funding. Currently, staff is working with the federal congressional delegation to change the earmark so that SANDAG can apply the remaining federal funds to a similar study of north-south alignments. Once this change is approved, the first phase would be to evaluate the feasibility of Maglev service along the I-15 corridor, in comparison to the other high-speed rail and conventional commuter rail options that are under study by RCTC. Other north-south corridors and their connections with other rail planning work being conducted in southern California would be evaluated in a future phase.

BOB LEITER
Director of Land Use and Transportation Planning

Attachment: 1. California High-Speed Train System Project Background

Key Staff Contact: Linda Culp, (619) 699-6957, lcu@sandag.org
CALIFORNIA HIGH-SPEED TRAIN SYSTEM
Project Background

Since 1993, the State of California has authorized the study of an intercity, high-speed passenger rail system. The California High-Speed Rail Commission studied this system until the agency “sunsetted” in 1996. The state then created a new agency, the California High-Speed Rail Authority (CHSRA), and gave it responsibility for planning, constructing, and operating a high-speed train system serving California’s major metropolitan areas, including San Diego. The Governor and Legislature have granted the CHSRA all the powers necessary to oversee the construction and operation of a statewide system once financing is secured. The CHSRA has a nine-member policy board and a small staff.

In 2000, the CHSRA adopted a Final Business Plan for an economically viable train system capable of speeds in excess of 200 miles per hour on a fully grade-separated track with state-of-the-art safety, signaling, and automated control systems. In 2007, the CHSRA completed the Ridership and Revenue Forecasting Study, updating key forecasts from the 2000 Final Business Plan. These and other documents are available on the CHSRA Web site at www.cahighspeedrail.ca.gov.

The proposed system stretches over 800 miles and would connect San Diego, Los Angeles, the Central Valley, San Francisco, and Sacramento (see Figure 1 below). San Diego would be connected from Los Angeles via the Inland Empire. High-speed train (HST) service along the Inland Corridor would parallel Interstates 215 and 15 and extend south to downtown San Diego. HST service on the coastal corridor would extend no further south than Irvine, as a result of environmental constraints along the coast and in coastal communities between South Orange County and San Diego. Between Los Angeles and Irvine, HST service would share the corridor with existing Amtrak intercity service, Metrolink commuter rail service, and freight.

The Safe, Reliable High-Speed Train Bond Act for the 21st Century is scheduled for the November 2008 ballot. This Act includes $9 billion for planning and construction of a HST system statewide. An additional $950 million is included in the Act for improvements to feeder rail systems including San Diego’s coastal rail corridor and other rail lines.
Figure 1
Proposed California High-Speed Train Statewide System
SAN DIEGO ASSOCIATION OF GOVERNMENTS

TRANSPORTATION COMMITTEE

April 6, 2007

AGENDA ITEM NO.: 9

Action Requested: DISCUSSION/POSSIBLE ACTION

LINEAR INDUCTION RAIL TECHNOLOGY DEMONSTRATION PROJECT

Introduction

Sandor Shapery, an advisory member of the Transportation Committee, has requested that SANDAG consider supporting a proposal to demonstrate a new transportation technology to improve rail transportation. The new technology is known as “LIM Rail” (Linear Induction Motor Rail), an adaptation of existing linear induction technology to a new application being proposed by Mr. Shapery.

Mr. Shapery and is seeking funding to complete a feasibility study and to advance the design of the LIM Rail components. The firm has submitted a preproposal to the South Coast Air Quality Management District (Attachment 1) and is seeking other federal and state funds to build a demonstration track. A full one-mile demonstration system is estimated to cost approximately $18 million to $20 million to develop a test track and utilize it for system validation. Mr. Shapery will provide a brief presentation on the proposed demonstration project and potential opportunities for the San Diego region.

Recommendation

The Transportation Committee is asked to discuss the proposed LIM Rail demonstration project, and consider supporting a proposal for a federal funding grant or earmark. If the Committee supports the funding request, it should require that the proposal does not compete for the same federal funding programs as other high-priority transportation projects from SANDAG, Metropolitan Transit System, or North County Transit District.

KIM KAWADA
Executive Program Manager

Attachment: 1. LIM Rail Preproposal

Key Staff Contact: Kim Kawada, (619) 699-6994, kka@sandag.org
1. Overview

LIM rail is a new transportation technology being developed to improve rail transportation by reducing harmful emissions and fuel consumption. LIM rail can yield near term environmental benefits and help reduce U.S. dependence on fossil fuels with a relatively small investment, taking advantage of transformational technologies being developed for civilian and military applications, including magnetic levitation (“maglev”) transportation and systems for rapid acceleration of aircraft and projectiles.

Innovative Transportation Systems Corp. and its industry partners, and, potentially, Union Pacific Railroad (discussions are on-going), seek $500,000 in AQMD funding to complete a LIM rail feasibility study and to advance the design of key LIM rail components. Completion of this study will position the team to acquire additional funding from other sources to build a small demonstration track. A full one-mile demonstration system is estimated to cost approximately $18-20 million to develop and utilize for system validation.

2. Summary Technical Description

In the LIM rail application (see illustration), linear induction motors are installed into existing rail lines, mounted between the tracks.

Illustration of LIM rail concept.

The linear motors consist of three-phase electrical windings integrated into modules that can be easily installed in this manner. An electrical current is generated within the windings by
power inverters spaced along the rail lines at approximately half-mile intervals. The current induces a magnetic field that moves linearly along the rails. This is the same principle used in traditional AC induction motors – the key difference is that in linear induction motors, the field is moved along a linear path, as opposed to being circulated within the stator of a round motor.

In the proposed LIM rail application, the linear induction motors create motion by inducing electric currents in aluminum plates mounted to the undercarriages of rail vehicles. The electric current in the metal plate then creates its own magnetic field, via which the plate – and hence the entire vehicle – is “pulled” along the track as the attractive force in the linear motor is moved linearly down the track. Using magnetic force to pull vehicles in this manner has two key advantages over conventional electrified rail systems:

(i) Elimination of the need for electrified third rails or overhead power lines. This eliminates potential safety hazards and the visual and other impacts of overhead lines. It also enables higher operating speeds than can be achieved by vehicles using electric power pick-ups.

(ii) Elimination of the need for motors or power electronics on board the vehicles. This makes the vehicles simpler, lighter, and less expensive than locomotives and other rail vehicles that provide tractive power via onboard motors.

3. Applications and Benefits

LIM rail systems can be installed in virtually any existing rail lines and used to transport cargo or passengers.

Using LIM rail for goods movement can mitigate the pollution and noise created by diesel locomotives and trucks currently used to transport cargo. This can be particularly beneficial in the vicinities of ports and border crossings, where air quality is impacted by large numbers of such vehicles transporting goods relatively short distances.

LIM rail can also be used in light rail and commuter rail systems, eliminating the emissions from diesel multiple units (DMUs) and offering a safer, less intrusive electrification option than systems using third rails or overhead power lines.

LIM rail can be integrated into existing rail systems while allowing seamless compatibility with current rolling stock while upgrading a system in need of repairs. For example, LIM rail could be used to build a extension of the San Diego Trolley system into areas where overhead catenary wires are undesirable or are in need of replacement. By combining both conventional trolley cars in the same consist with LIM rail cars, such trolley consist could operate successfully in either system.

In addition, LIM rail can be utilized in specific areas of both short and long distance rail lines to improve system performance and efficiency, or to reduce emissions or noise in critical areas. Linear motors can be installed on steep uphill grades, providing additional power to locomotives equipped with metal plates to take advantage of this feature. This can eliminate the expense associated with using “helper” locomotives just to get trains over steep hills. Installed on downhill slopes, linear motors can enable the recapture of energy from trains as they brake, improving efficiency. Installed in tunnels, linear motors can allow diesel trains to shut down their diesel engines temporarily, eliminating the dangers of filling tunnels with harmful emissions.

As illustrated in the graphic on the following page, it is estimated that LIM rail could achieve NOx reductions of 99.3%, even as compared with the cleanest Tier 2 diesel locomotives. It is also projected that LIM rail could result in net fuel savings of approximately $1 million for every...
250 million ton-miles of freight carried over conventional rail (after deducting for the cost of grid electric power required to run LIM rail). Based on the 1.76 trillion ton-miles of rail traffic handled in the U.S. annually (Association of American Railroads, 2005 data), if 15% of U.S. freight were carried by LIM rail, the rail industry would achieve net fuel savings of $1 billion/year.

The linear motors and other power equipment used in LIM rail are similar to the propulsion components required for future magnetic levitation (maglev) systems. Therefore, adoption of LIM rail technology will yield experience and production efficiencies that can reduce the cost and risk of future maglev systems.

By using existing rail infrastructure, LIM rail can provide these benefits faster, and with a smaller investment, than transportation solutions that require major new infrastructure improvements (e.g., new highways or rail lines, conventional or maglev). Preliminary cost estimates indicate that it may be possible to install LIM rail systems for a cost on the order of $10 million per mile, which would make LIM rail competitive with conventional rail electrification technologies.

4. Technology Status and Proposed Next Steps

The technological foundation for LIM rail is well proven, so while the concept is very innovative, it is a low risk new development. Linear motor technology has been used in public passenger transportation systems for about twenty years. Light-rail vehicles using linear motor technology currently operate at a number of locations worldwide, including JFK Airport (New York), Detroit, Vancouver, Toronto, and Kuala Lumpur. These systems all rely on linear induction or linear synchronous motors located on the vehicles. The linear motors generate magnetic forces that react against conducting plates (typically aluminum) mounted between the rails, propelling the vehicles forward.
Most previous linear induction rail or maglev systems have used linear induction or linear synchronous motors with the reactive plate or magnets mounted in the guideway. LIM rail uses an even simpler approach, with the linear motors reacting against simple aluminum plates mounted to the vehicles. This basic technology has been demonstrated on programs for the Air Force and Navy. Recent developments have pushed the state-of-the-art in high-power linear motor technology to a level that now allows it to easily be adapted to heavy rail systems, providing near-term solutions to existing railroad operations. In fact, General Atomics has already established a production facility in Tupelo, MS for manufacturing linear motor modules similar to those required for a LIM rail application.

To implement LIM rail technology, Innovative Transportation Systems Corporation anticipates three phases of development, summarized as follows:

- **Phase 1:** Engineering feasibility and design study/subscale demonstration – Define LIM rail components in greater detail, optimizing the design of linear motors and other major elements. Develop detailed cost estimates. Estimated cost: $500,000 over a 6-month period (see *Appendix A, Proposed Statement of Work*). In parallel with completion of this work, the team plans to seek additional funding from other sources to perform a subscale demonstration by building a 300-400 foot LIM rail test track.

- **Phase 2:** Initial 1-mile demonstration – Based on the results of the feasibility and design study, design a linear motor module optimized to meet LIM rail performance requirements at the lowest recurring cost. Convert an existing 1-mile segment of rail to LIM rail technology, and demonstrate the ability to transport several types of rail cars over this test track. This demonstration would be the first utilize the newly designed linear motors optimized for the LIM rail application. Estimated cost: $18-20 million over a 2-year period.

- **Phase 3:** First operational application/full-scale commercialization – Convert an existing segment of up to 10 miles of cargo or passenger rail to LIM rail. Validate benefits in actual operation. Pursue full-scale commercialization of LIM rail technology. Target cost: approximately $10 million per mile.

**Additional Information**

For additional information on LIM rail, please contact:

Sandor W. Shapery, President
Innovative Transportation Systems Corporation
402 West Broadway, Suite 1220
San Diego, CA  92101
619.239.4700
619.237.0191 fax
sandy@shaperyenterprises.com
Appendix A
Proposed Statement of Work - Preliminary
Phase I LIM rail Engineering Feasibility and Design Study

Task 1. Requirements Development (10%)
Contractor shall develop system and operational requirements for a LIM rail system, including consideration of train power requirements under various operating scenarios, equivalent electric power requirements, linear motor thrust requirements, development of the overall system and control architecture, and general operating requirements.

Task 2. Engineering Analyses and Trade Studies (20%)
Contractor shall perform engineering analyses and trade studies to validate technical feasibility and determine optimum design parameters for key LIM rail components, including linear induction motor power rating, module dimensions, and packing density; spacing of inverters; size and heating characteristics of reactive plates; and mounting of plates on just locomotives versus all rail cars.

Task 3. Preliminary Design (35%)
Contractor shall develop preliminary designs for key LIM rail components such as linear motors, inverters, block switches, and reactive plates, optimized on the basis of Task 2 trade studies. Use of existing linear motor and related hardware developed for other programs shall be evaluated as a means of demonstrating LIM rail feasibility prior to building optimized components.

Task 4. Cost-Benefit Analysis (17%)
Contractor shall perform a cost-benefit analysis to characterize LIM rail costs and benefits as compared with conventional rail and alternative means of goods movement, including consideration of emissions reduction, fuel savings, electricity costs, reliability, noise, throughput, and other considerations.

Task 5. Commercialization Plan (10%)
Contractor shall develop a LIM rail Commercialization Plan describing a strategy for marketing and commercial adoption of LIM rail technology. The Plan shall address investment requirements, potential sources of funding, private-public partnership options, payback scenarios, and implementation plans, including generation of schedules for development, manufacturing, and deployment.

Task 6. Management and Reporting (8%)
Contractor shall manage all tasks and submit reports to the AQMD, including monthly progress reports, a draft Final Report, and a Final Report incorporating AQMD comments.

(Numbers in parentheses are the approximate percentages of the total study level of effort to be allocated to each task).
April 2, 2007

SANDAG
Attn: Transportation Subcommittee
401 B St., Suite 800, San Diego, CA 92101

Via E-Mail: webmaster@sandag.org

SUBJECT: RTP Hwy. 67 (Mapleview, Lakeside to Dye Rd., Ramona)

Dear Trans. Subcommittee Chair and Members.

I am writing as an opponent of request for widening of Hyw 67 to four lanes at the above subject roadways.

Historically the San Diego County Board of Supervisors have consistently created land use policies that are in direct opposition to responsible planning for the rural areas of San Diego County. These last remaining rural and agricultural areas are burdened with underlining density that is urban and requires urban services that are not available. When these decisions were being made, twenty years ago, there was no concern to preserving sensitive habitat, clean air, water and agriculture that could be sustained. Now the Board of Supervisors wants the rest of urban San Diego County to pay for their decisions that favored developers and urbanization of rural areas like Ramona.

Ramona is constrained by distance and topography on a grand scale. Ramona is like a hidden valley protected by majestic, bolder laden mountains. The cost to improve the short distance between Archie Moore Rd and Dye Rd. would be extremely expensive and would adversely effect the hundreds of homes that are along that stretch of roadway. They are ‘side friction’. Currently the residents can get across, or enter the existing two lane road that borders their private streets. However, a four lane road would be very dangerous at any time of day. The peak drive time, mornings and evening, is the only time that this stretch of road is slowed to a level F.

The only reason that Supervisor Jacob wants to have money for this road improvement is so that the Board can approve the ill-advised, fast tracked, large urban developments in Ramona. These projects are Specific Plan Areas (SPA). This an ultimate urban land use tool. These projects are proven to be too large and incompatible with the rural character goal of the Ramona Community Plan. This type of planning is in conflict with the county’s own ‘Smart Growth’ plan.

Ramona’s unique topography and its location make it incompatible for growth in any kind of industrial capacity. There is no increased expensive water, sewer improvements or roads that will make the fact that Ramona is far from distribution points and no manufacturing, of any scale to produce jobs, can make a profit here.

The intent of the Supervisors and the same few vocal individual who represent the Ramona Chamber of Commerce, is to increase the income of a few at the expense of the rest of the County and State taxpayers. This section of Ramona’s loud minority do not represent the majority of the thinking Ramona residents.
Please do not encourage further misuse of the remaining rural lands in San Diego County by enabling the Board of Supervisors to continue to make disastrous concessions to a few very influential developers. These land speculators/investors are holding approximately 1500 acres of agriculture pasture land that is constrained by the Santa Maria Creek and an abundance of endangered species of plant and animal life. The developers housing proposal would create 600 DU’s at approximately 6000 ADT’s added to the road system. The project propose sewer extensions and roads through pristine landscapes. This only benefits developers at the expense of the residents of Ramona and the taxpayers of San Diego County. The health, safety, welfare and financial stability of the county of San Diego is at risk.

We look to SANDAG to not be purchased by special interests and to not allow good money to be thrown into the black hole of bad land use planning.

Sincerely,

Vivian Osborn, Member Ramona Community Planning Group commenting as an individual and as a concerned 34 year resident of Ramona.
## Development Projects Contributing Transit-Related Improvements

### for July 2006 through December 2006

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Budget Transfer for LRT Station Shelter Replacement Project

- SANDAG implements rail construction projects for MTS
- Station Shelter Replacement Project additional funding for project close-out
- Capital Needs Assessment Project has available funding

LRT Station Shelter Replacement Project/25th and Commercial Station Upgrades
## Budget Transfer Summary

- Approved by MTS Board March 8, 2007
- Recommend budget increase
- Recommend transfer of funds

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>Budget ($1,000's)</th>
<th>EST. COST TO COMPLETE</th>
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<td>LRT Station Shelter Replacement Project</td>
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<td>Capital Needs Assessment Project</td>
<td>$190</td>
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Current Progress

- Track: 20 of 32 miles complete
- Stations: Platform work near completion and canopy work has begun
- DMU’s: preliminary acceptance of 3 vehicles; brake testing this week
- Rancho Del Oro landslide: repair work complete this month
Schedule

- All major civil work (except stations) to be completed late spring
- Systems and start-up work control Revenue Operations Date (ROD)
  - Systems work accelerated: 3 new crews this month
  - Communications equipment accelerated
- Critical path schedule still Jan ’08
- December 2007 ROD still achievable
Mainline SPRINT Rail Project

Remaining Work Schedule

<table>
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<tr>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<td>Systems Work</td>
<td>Cal State University San Marcos Loop Project</td>
<td>Mainline Civil and Track Work</td>
<td>Vehicle Maintenance Facility Construction - VMF</td>
<td>Vehicle Testing</td>
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</table>
Cost

- Estimate at completion - $448.1M compared to $447.7M last month
- Designer’s cost 12% under budget
- CM cost will likely increase
- Change Orders: 7.4% of work
- Budget: $484.2M

Estimate at Completion Trend
Inland Rail Trail

- 6.5 mile bike trail in Escondido & San Marcos that parallels the SPRINTER
- Work included in SPRINTER Mainline contract
- Work done concurrently with SPRINTER
- Current budget: $26.3 million

Inland Rail Trail

- Additional funding needed to pay for:
  - IRT share of environmental mitigation
  - Construction quantity increases
  - Design support
  - Construction management
- Estimated at $3.5 million plus IRT’s share of any future Mainline claim settlements
- NCTD is working with SANDAG to identify potential funding sources
PROJECT CONCERNS

• Schedule: lack of “float” in contractor’s schedule for systems work
  – Contractor agreed last week to add 3 new crews

• Need project schedule that “fixes” opening ROD and backs in key milestones

PROJECT CONCERNS

• Traffic signals @ grade crossings need close coordination and cooperation with each local agency to avoid delaying full speed testing of DMU vehicles
PROJECT CONCERNS

• Estimate at Completion:
  – Create a core management team responsible to monitor all costs
  – Revisit estimating assumption made last fall
  – Separate IRT costs from Mainline contract
  – Determine final construction quantities of major elements of work

SPRINTER
STATUS REPORT

April 6, 2007
Report on the Regional Transit Performance Monitoring System

First Quarter FY 2007

Why Quarterly Transit Performance Reports?

• Mandated by SANDAG Regional Transit Service Planning Policy (Policy 18)

• Required by California’s Transportation Development Act (TDA) to evaluate specific indicators

• Provides tool for understanding trends:
  – Service performance
  – Seasonal variations
  – Service/policy change impacts
Performance Indicators

- **Cost Effectiveness**
  - Operating Cost Per Passenger

- **Cost Efficiency**
  - Operating Cost Per Revenue Hour

- **Service Productivity**
  - Passengers Per Revenue Hour
  - Passengers Per Revenue Mile

- **Labor Productivity**
  - Revenue Hours Per Employee

- **Service Cost Efficiency**
  - Farebox Recovery Ratio

Quarterly Report Format

- Developed in conjunction with MTS & NCTD (Regional Short Range Transit Planning Task Force)

- Agreement to evaluate over 3-year period to identify long term trends

- Performance measured for:
  - COASTER, Trolley and Bus (Fixed route services)
  - MTS DART, NCTD FAST, MTS ADA & NCTD ADA (Demand Responsive/ADA)

- Used composite index of all six indicators to measure overall performance
Composite Overall 3-Year Trend Index:
- MTS Trolley (+2%): Increased ridership outpaced increased costs
- MTS Bus (-2%): Stagnant ridership; doesn’t reflect COA changes
- NCTD Breeze (-1%): Ridership declines; before fare/route changes
- NCTD COASTER (-1%): Increased operating costs (rises in fuel)
Composite Overall 3-Year Trend Index:

- MTS DART (-5%): Declines in ridership & fares with FY 04 service reductions
- NCTD FAST (-2%): Declines in ridership due to service cutbacks
- MTS ADA (-6%): Stagnant revenues and passengers
- NCTD ADA (-14%): Positive trends in FY 05/06, but recent decreased performance due to contractor changeover
Cost Effectiveness: Operating Cost Per Passenger

Figure 1: Operating Cost per Passenger, FY04, FY05, and FY06
(Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation

Cost Efficiency: Operating Cost Per Revenue Hour

Figure 2: Operating Costs per Revenue Hour, FY04, FY05, and FY06
(Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation
Service Productivity: Passengers Per Revenue Hour

Figure 3: Passengers per Revenue Hour, FY04, FY05, and FY06 (Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation

Service Productivity: Passengers Per Revenue Mile

Figure 4: Passengers per Revenue Mile, FY04, FY05, and FY06 (Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation

Legend:
- MTS Bus
- Trolley
- MTS DART
- MTS ADA
- NCTD Breeze
- COASTER
- NCTD FAST
- NCTD ADA
- NCTD Fare & Route Changes
- COA: Phase II Implementation
**Labor Productivity: Revenue Hours Per Employee**

Figure 5: Revenue Hours per Employee, FY04, FY05, and FY06 (Logarithmic Scale)

- NCTD Fare & Route Changes
- COA: Phase II Implementation

**Service Cost Efficiency: Farebox Recovery Ratio**

Figure 6: Farebox Recovery Rate, FY04, FY05, and FY06

- NCTD Fare & Route Changes
- COA: Phase II Implementation
Future Quarterly Reports

- Quarter 2, FY 07: June, 2007
- Quarter 3, FY 07: September, 2007
- Quarter 4, FY 07: December, 2007
- Quarter 1, FY 08: March, 2008

Next Steps

Results used to:
- Develop strategies to reverse negative trends
- Reinforce positive performance
- Improve service delivery
Report on the Regional Transit Performance Monitoring System

First Quarter FY 2007
San Diego Association of Governments (SANDAG)

- Introduction
- Linear Induction Motor Systems
- ITSC Advances the Concept
- Benefits of Linear Induction Rail
- Conclusions
San Diego Association of Governments (SANDAG)

Emerald Shapery Plaza
W Hotel San Diego
Shapery Park Tower (design)
Sempra Energy Headquarters Bldg

Shapery Enterprises

Innovative Transportation Systems Corporation

Current Linear Induction Motor (LIM) Applications

Roller Coaster Drive Systems (Various Producers)
Navy Electromagnetic Aircraft Launch System (General Atomics)
Vancouver Light Rail System, Vancouver, Canada (Bombardier)
Detroit People Mover (Bombardier)
JFK AirTrain (Bombardier)
Kuala Lumpur Transit (Bombardier)
Scarborough Light Rail System, Toronto, Canada (Bombardier)
Shanghai Transrapid Maglev (Thyssen Krupp/Siemens)

Low Speed Maglev (General Atomics)
San Diego Association of Governments (SANDAG)

• Goal: Adapt linear motor technologies to existing rail

• Approach: Linear Induction Motor system for rail transport
  - “Reversal” of current LIM designs – Motor in the track and not on the vehicle.
  - Propulsion achieved by inducing an electric current in aluminum plates mounted to the underside of vehicles

• Advantages over other rail electrification methods
  - Clean and efficient technology
  - Uses existing rail infrastructure
  - No electrified 3rd rails or overhead power lines
  - No motors or active power systems onboard – reduces weight and cost of vehicles

San Diego Association of Governments (SANDAG)

• Rail component
  - Linear induction motors propel objects using the same principle as AC induction motors
  - Linear Induction windings fastened to railroad ties between rails

• Vehicle component
  - Reactive plates made of any conductive material (typically aluminum) are mounted to undersides of vehicles
  - Moving magnetic fields generated by induction creates currents in reactive plates to pull them along the induction segment

• Principles are proven
  - Linear motors are used in several rail systems around the world
  - This linear induction rail system (Induct-Rail) reverses the usual method of linear motor operation, placing the motor in the track instead of on the vehicle
San Diego Association of Governments (SANDAG)

Innovative Transportation Systems Corporation

Induct-Rail Concept

- Aluminum plate mounted under locomotive or rail car
- Linear motors
- Rail
- Linear motor mounted on existing rail cross ties
- Inverter
- Top view

Linear Induction Motor Major Components

- Inverter/Rectifier
- Linear Motor Stators
- Block Switches

Innovative Transportation Systems Corporation
San Diego Association of Governments (SANDAG)

Potential Benefits

- Zero emissions
- Economical
  - Energy efficient, reduces dependence on fossil fuels
  - Reduced capital and maintenance costs
  - Can use existing tracks and rights-of-way
- Numerous additional social benefits
  - Reduced noise – no engine on locomotive
  - Safe – no electrified third rail; windings energized only when vehicles pass by
  - No unsightly overhead power lines
  - Accommodates increased volume – reducing truck traffic, emissions, and road wear

Low Flat Floors

San Diego Association of Governments (SANDAG)

Calculation of Linear Induction Motor Fuel Savings vs. Diesel

- Operating assumptions
  - 10-mile route with 1 million cargo cars/year
  - 50 tons/car → 500 million ton-miles of traffic per year
- Diesel fuel cost (conventional locomotives)
  - 400 ton-miles/gallon fuel over 500 million miles = 1.25m gal/yr
  - 1.25 million gal/year x $2.50/gal = $3.13M/year diesel fuel cost
- Electricity cost
  - 0.5 lb diesel/Hp-hr → 14 Hp-hr/gal → 10.6 kWhr/gal
  - 400 ton-miles/gal over 500 million miles = 13.3m kWhr
  - 13.3M kWhr x $0.085/kWhr = $1.13M/year electricity cost
Calculation of Linear Induction Motor NOx Reduction vs. Diesel

- Same operating assumptions (500 million ton-miles/year of traffic)
- NOx emissions (conventional locomotives)
  - 202 g NOx/gallon fuel x 1.25 m gal/yr = 252.5 m g NOx/yr
  - 252.5 M g NOx/year = 278 tons NOx/year
- NOx emissions (Induct-Rail)
  - 0.15 lb NOx/MWhr (2000 SCE power plant rule)
  - 0.15 lb NOx/MWhr x 13,300 MWhr/year = 1,995 lb NOx/year
  - 1,995 lb NOx/year = 1 ton NOx/year
- That’s 278 Tons vs. 1 Ton over a single 10 mile stretch of rail
LIM-Ready Light Rail Vehicles
- No onboard motor allows for light weight, low floors, and lower cost vehicles
- Connect to existing rolling stock consists throughout upgrade period
- Further study will demonstrate ability to interconnect Induct-Rail vehicles and existing rolling stock to allow for seamless switching between Induct-Rail and Catenary systems during upgrade

Potential Southern California Uses for Induct-Rail
**Goods Movement**
- Port of Los Angeles/Long Beach
- Alameda Corridor

**Passenger Rail**
- Light Rail: Eliminating Overhead Lines
- Metrolink: Mitigate Exhaust, Noise
San Diego Association of Governments (SANDAG)

Potential Applications

• System-wide Application
  • As an alternative to standard diesel passenger or freight rail systems to eliminate emissions and save fuel
  • As an alternative to conventional electrified rail systems to eliminate overhead power lines and “live” third rail

• Specialized Applications
  • Install on track segments near populated areas to reduce emissions and noise
  • Install in vicinity of passenger commuter rail stations to reduce exposure to exhaust as trains accelerate out of the station
  • Install on grades to assist diesel trains climbing hills and recapturing energy on descent
  • Install on track segments where overhead lines or third rails are infeasible, due to at-grade crossings, intersections, or statutory prohibitions

Suggested Next Steps

• Engineering Feasibility Study (~6 months)
  • Perform key trade studies
    ➢ Linear motor size and packing density
    ➢ Reactive plate design/use (e.g., locomotives vs. all cars)
    ➢ Operational scenarios
  • Develop designs for preferred configuration(s)
  • Generate credible estimates of costs and benefits
  • Option: build subscale (~100 meter) proof-of-concept system

• Full-Scale Demonstration System (~2 years)
  • 1 mile conversion of existing rail
  • Installation of reactive plates on several locomotives and/or rail cars
  • Sequence of operational tests to validate system
San Diego Association of Governments (SANDAG)

Potential Project Partners

- Bombardier
- General Electric
- General Atomics
- Lockheed Martin
- Siemens
- Union Pacific Railroad

San Diego Association of Governments (SANDAG)

Questions?

Innovative Transportation Systems Corporation

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San Diego, CA 92101
619.239.4779
sandy@shaperyenterprises.com
www.shaperyenterprises.com
Overweight is Epidemic
Rates in Adults

- 2/3rds of American adults are overweight
- In 1991 rates were 45% (almost 50% increase in 15 yrs)
Obesity Trends* Among U.S. Adults  
BRFSS, 1985

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)

No Data  <10%  10%–14%

Obesity Trends* Among U.S. Adults  
BRFSS, 1989

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)

No Data  <10%  10%–14%
Obesity Trends* Among U.S. Adults
BRFSS, 1993

Obesity Trends* Among U.S. Adults
BRFSS, 1997

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults
BRFSS, 2000

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)

Obesity Trends* Among U.S. Adults
BRFSS, 2002

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)
Obesity Trends* Among U.S. Adults  
BRFSS, 2004

(*BMI ≥30, or ~ 30 lbs overweight for 5’ 4” person)

- No Data
- <10%
- 10%–14%
- 15%–19%
- 20%–24%
- ≥25%

Our Kids are At Risk

- The rate of overweight in kids has doubled since 1970’s
- 70% chance of being overweight/obese as adults
- 1 in 3 will be diabetic

1st generation of kids in the US that aren’t expected to live as long as their parents
Health Implications

- Cardiovascular
- Endocrine (Hormonal)
- Orthopedic
- Pulmonary
- Hepatic
- Psychosocial

Adding up the concerns
Kids

- Each year, more American children are killed by obesity than by gun violence
  (U.S Surgeon General’s Call to Action)
- Obese children suffer from:
  - depression more than pediatric chemotherapy pts
  - “low quality life” at 5x the rate of non-obese children
  - More missed school days and lower academic performance
  (JAMA, April 2003)
Explaining the Epidemic

- Not genetic or biological changes
- Lifestyle and environmental changes
Leading Causes of Obesity

- Poor Nutrition: Taking in too many calories
- Inactivity: Burning off too few calories

Poor Nutrition

- Fast Food
  - Five-fold increase since 1970
  - 1/3 of US kids eat daily
  - Kids eat 187 more calories/day with fast food
  - Extra six pounds of weight per year
- Super-size me
  - Portion sizes
  - Bigger isn’t always better
  - “Value”
“My doctor told me to stop having intimate dinners for four--unless there are three other people.”

--Orson Welles

### Poor Nutrition

- **Sugars and Refined Flours**
  - Soda consumption has doubled in 20 years,
  - Milk consumption has decreased 40%
  - Refined flours are stripped of vitamins, minerals and fiber and convert to sugar more rapidly than whole flours.

- **Processed Foods**
  - Higher in calories, fat and salt
  - Lower in fiber
  - > 4 meals per week

- **Irregular Meal Patterns**
  - Family meals promote positive dietary intake
  - Fewer meals together than the past generations.
Physical Inactivity

- 25% of adults are sedentary
- 60% of adults not active enough
- 78% of kids don’t meet physical activity requirements.


Inactivity

- Electronic Media & Kids
  - Average 5-1/2 hrs / day (2 hrs + if computer/TV in room)
  - More time than anything else, besides sleeping.
  - Preschoolers spend as much time with screen media as they do playing outside.

- Less Physical Activity
  - In School
  - After School
The disappearing walk to school

- Only 13% of children walk or bike to school as compared to 66% in 1974. (CDC, 2000)
- About 85% of children are driven to school in private vehicles— even when the students live less than two miles away.
- 50% of children who live less than a mile away are driven to school regularly. (CDC, 2002)
- Average US household makes 12 trips per day
- ¼ of all trips are <1 mile, yet ¾ of them are made by car

Walking replaced by driving

- 42% decline in walking
- 90% of trips done by car; less than 6% on foot
- 25% of all trips are one mile or less, but 75% of these trips are made by car
Increasing Vehicle Travel

Figure 2-2
Vehicle Miles Traveled (VMT) Per Capita, 1960–1995

Miles per Capita: 1960 to 1995

From 4000 to 9200 VMT per person

30 Minutes-Most Days

- There are substantial health benefits with accumulating just 30 minutes of moderate activity throughout the day

- 3 minute bouts of physical activity (for a daily total of 30 minutes) lowers triglycerides to the same extent as one 30-minute workout

(Miyashita et al., 2006)
How do we achieve change? Is it just personal choice?

“It is unreasonable to expect people to change their behavior easily when so many forces in the social, cultural and physical environment conspire against such change.”

Institute of Medicine

Ecological Model

- Businesses
- Neighborhoods
- Individuals
- Families
- Policies and Laws
Neighborhood environment is one of the strongest predictors of whether a person will be physically active.

(Brownson, et al. 2001)

The built environment can facilitate or constrain physical activity.

(TRB/IOMReport, 2005)

**Built Environment and Health**

**Community Design Policies Work!**

Task Force on Community Preventive Services:

- Street-scale policies & design are effective:
  - Traffic calming
  - Street lighting
  - Improving street crossings

- Community-scale policies & design are effective:
  - Zoning for compact, mixed-use development
  - Policies related to street design & connectivity
  - Transit-oriented development
Transit-Oriented Development

- Increases mobility choices
  - Can lower annual household rates of driving by 20-40%
- Saves valuable resources:
  - energy, air quality, time
- Increases household discretionary funds
  - driving costs; saves $3,000 - 4,000 per year per household

CA Department of Transportation, "Statewide Transit-Oriented Development Study: Factors for Success in California," May 2002
From Dr. Eloisa Gonzalez; Los Angeles County Department of Public Health

New Area of Research: Growing Body of Evidence

- San Diego study: 70 minutes more physical activity/week among residents in walkable neighborhood; 35% vs. 60% overweight
  (Saelens, Sallis, et. al. 2003)
- 6 lb weight difference in sprawling vs. compact counties
- King County study: 5% increase in neighborhood’s “walkability index” correlated with 32% increase in active transportation; 0.23 point reduction in BMI
  (Frank, Sallis, et. al. 2006)

SHCC
Pedestrian improvements get more kids walking to school

- Marin, Co SR2S evaluation:
  64% increase in number of kids walking to school with safety &
  traffic calming improvements & encouragement

(Designing to Reduce Childhood Obesity. ALR, February 2005)

Expanding our Roles and Vision

Urban planners, Transportation Engineers and Architects:
Have a critical role in public health

************

Public Health needs to appreciate the built environment influences public health as much as vaccines or water quality.

Jackson & Kochtitzky, 2001
---paraphrased
The Public Health Impacts of the Built Environment

- Physical activity
- Obesity & chronic disease
- Pedestrian injuries/death
- Crime & violence
- Social capital
- Elder health & mobility
- Water quality & quantity
- Mental health
- Health disparities
- Asthma & respiratory disease

Acute Asthma Events Among Children and Youth During the 1996 Summer Olympic Games

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Type of Asthma Event</th>
<th>Mean No. of Events Per Day</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baseline Period</td>
<td>Olympic Period</td>
</tr>
<tr>
<td>GA Medical Claims</td>
<td>Emergency care and hospitalizations</td>
<td>4.23</td>
<td>2.47</td>
</tr>
<tr>
<td>HMO</td>
<td>Emergency care, urgent care and hospitalizations</td>
<td>1.36</td>
<td>0.76</td>
</tr>
<tr>
<td>Emergency Departments</td>
<td>Emergency care and hospitalizations</td>
<td>4.77</td>
<td>4.24</td>
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<tr>
<td>GA Hospital Discharges</td>
<td>Hospitalizations</td>
<td>2.04</td>
<td>1.65</td>
</tr>
</tbody>
</table>

*Defined as June 21-July 18 and August 5-September 1, 1996
+Defined as July 19-August 4, 1996
Mean Levels of Major Air Pollutants

Mean Levels of Major Pollutants Before, During and After the 1996 Summer Olympic Games as a Percentage of the National Ambient Quality Standard (NAAQS)

Traffic Density by Race/Ethnicity Among Children With Asthma

Latino children with asthma are nearly 2 1/2 times more likely than White children to live near heavy traffic, while Asians/others and African American children are almost twice as likely.
Call to Action
San Diego County
Childhood Obesity Action Plan
2006

Recommended strategies in 7 domain areas:
1. Community and city governments
2. Healthcare systems and providers
3. Schools
4. Childcare, preschools, and before- and after-school providers
5. Community-based, faith-based and youth organizations
6. Media outlets and marketing industry
7. Businesses
Health as a General Plan Goal in King County, WA

- Health & Transportation departments collaborated
- Commissioned study on health/transportation links
- The first Comprehensive Plan with physical activity/health as a goal and policies in the Urban Form and Transportation Elements

King County, Washington

King County pursues aggressive “smart growth” strategies:

- **Land use** - combating sprawl and building healthier communities.
- **Public transportation** - getting more people onto leaner, greener buses.
- **Environmental management** - turning waste into energy.
- **Clean energy** future – stimulating climate-friendly fuel and technology markets for a prosperous, sustainable economy.

Ron Sims, King County Executive

From Dr. Eloisa Gonzalez; Los Angeles County Department of Public Health
What Has Been Done to Date in LA County:

- LAC Public Health and Regional Planning Directors have agreed to have their staff work collaboratively on General Plan update.
- Public Health has met with Regional Planning and provided feedback/suggestions on “Shaping the Future 2025” in support of healthy, livable communities.
- Policies supporting healthy, livable communities have been incorporated into the Draft Preliminary General Plan.

Next Steps for LA County:

- Fine-tune new Public Health language in new general plan.
- Review/revise zoning ordinances to ensure they are in support of new general plan.
- Board approval/adopterion of new general plan and zoning ordinances.
- Public Health input into proposed new developments at Regional Planning’s subdivision committee meetings and EIR reviews.

From Dr. Eloisa Gonzalez; Los Angeles County Department of Public Health.
We welcome your suggestions!

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Thank you!