

## **Summary**

From January 6-8, 2005, 40+ elected, business, and transportation leaders traveled from North Carolina to San Diego and southern Orange County, California in order to learn from and engage experts on a series of mobility solutions with which North Carolina has little or no experience. Through the 2005 Regional Transportation Alliance Leadership Tour, participants received an opportunity to tour and learn about the operation of HOT/FasTrak lanes, toll roads, local transportation options, ramp meters, trolleys/light rail, regional rail, and more.

The goal of the tour was education and collaboration with leaders from another region who face similar issues to those we face in urban areas in North Carolina. Tour participants were able to view a range of solutions, understand the implications of each solution and understand the relationships that had to be formed among elected officials, government agencies, business and the electorate to implement the solutions.

This briefing report provides a summary of *background and observations*, lessons learned, and **opportunities and challenges for North Carolina** from the attendees of the 2005 Alliance Leadership Tour to San Diego and southern Orange County, California, as well as a series of background materials.

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**Part I –2005 Alliance Leadership Tour Findings and Opportunities for North Carolina**

**1 – Local revenue option, cash flow management, and project delivery**

*Background and observations:*

*Gary Gallegos and Ken Sulzer - the current and former executive directors of the San Diego Association of Governments (SANDAG) – described San Diego’s successful “TransNet” program. SANDAG, which serves as the regional transportation planning agency for San Diego, operates the ongoing TransNet initiative - a locally-funded and managed transportation program created in 1988 in response to explosive growth. Voters approved the initial program – primarily funded by a ½ cent county sales tax dedicated to transportation - with a 53% level of support. Since that time, billions of dollars of transportation projects in the region have been successfully planned and implemented. In November 2004, voters approved a 40-year renewal of the existing ½ cent sales tax by more than a 2:1 margin.*

*The 2004 campaign for the renewal of TransNet local revenue option for transportation was highlighted by targeted marketing of proposed benefits in local areas throughout San Diego County in addition to a focus on major projects benefiting the entire San Diego region. The balanced TransNet program – which allocates roughly 1/3 of the revenues to the freeway system, 1/3 to local roads, streets, intelligent transportation systems (ITS), and operations and maintenance, and 1/3 to transit construction and operations – is used to leverage state, federal, and private dollars and accelerate (through bonding) by decades the transportation projects listed in the “Mobility 2030” plan for the San Diego region. Given the expansive nature of the existing freeway system, only 37 miles of new freeway will be constructed under the plan, with the remainder of the freeway resources applied towards restricted or “managed” lanes on the existing freeway system and associated bus rapid transit (BRT) services.*

*Many groups “bought in” to the balanced multimodal modal approach for the TransNet renewal. The support was bipartisan, and included environmentalists, taxpayers' groups, developers, etc. In addition, the sales tax was not the only revenue piece – impact fees on development were also included. A taxpayer oversight committee has been instituted to ensure safeguards of the public’s resources.*

*Cash flow management and project delivery practices are employed through a close partnership between SANDAG and Caltrans District 11 that seeks to minimize project delivery times. SANDAG, which serves as a single metropolitan planning organization (MPO) for all of San Diego County, controls roughly 75% of the state resources in the region through a formula allocation, with the state controlling 25%. Organizationally, Caltrans District 11 has a programming branch that works directly with a similar branch at SANDAG. These branches perform most of the program-level fund swaps and cash management. Activities include TIP amendments, coordinating funding needs and priorities, etc. Project managers on large or complex projects have an assistant who is responsible for implementing and monitoring expenditures. SANDAG also serves as an implementing agency in addition to Caltrans.*



***1 – Local revenue option, cash flow management, and project delivery (continued)***

Lessons learned

- Additional resources beyond those available from the State are needed to meet the many challenges of a rapidly growing market.
- When given specific proposals, the voters will approve – resoundingly – additional investments in transportation if they understand the benefits and such benefits are guaranteed.
- Voters supported the balanced approach to mobility solutions – 1/3 regional freeways, 1/3 local streets and highways, and 1/3 transit – and the geographical balance for projects.
- Having a single MPO serve an entire region helps an area speak with one voice and deal with issues from a regional perspective.
- To facilitate project delivery, the State of California empowered local MPOs to play a lead role in the planning, execution, and managing of regional transportation strategies.

**Opportunities for North Carolina**

- **North Carolina’s counties should be permitted to implement local revenue options for multimodal transportation solutions. The enabling language should be flexible to allow the regions to explore many options for raising additional revenue.**
- **After receiving authorizing approval, North Carolina’s counties participating in local option should assemble a package of multimodal projects that could be accelerated if additional resources are made available.**
- **Safeguards should be incorporated in the legislation, including the opportunity to hold a referendum as well as periodic review, to ensure the support of the public.**
- **A reexamination of the state-MPO relationship in North Carolina should occur, with an eye toward empowering the MPOs as well as strengthening NCDOT’s focus and resources for preserving the trunk highway system.**
- **Given the dual MPO nature of the Triangle – with the Capital Area MPO (CAMPO) serving Wake County and portions of other eastern Triangle counties, and the Durham-Chapel Hill-Carrboro (DCHC MPO) serving Durham County and portions of Orange and other western Triangle counties – it will be critical that the region’s MPOs continue to cooperate and coordinate with each other as well as other stakeholders including NCDOT, TTA and other transit agencies, and the private sector.**



## **2 – Transit and transit-oriented development**

### *Background and observations:*

*The San Diego Metropolitan Transit System (MTS) operates an extensive transit system that includes a network of bus lines in central and southern San Diego County, two trolley/light rail transit (LRT) lines that connect downtown with two sports arenas and the international border, and a paratransit (door-to-door) service. The trolley is the first in the United States of the “new generation” of light rail transit and remains among the largest systems in the country. The North County Transit District (NCTD) operates a network of bus lines in northern San Diego County as well as the regional Coaster rail line that connects northern suburbs with downtown. The Coaster rail is a diesel-powered unit – like the proposed TTA rail in the Triangle – but it is considered heavy rail because it has a locomotive, rather than the proposed diesel multiple units (DMUs) for the Triangle.*

*Signage for the trolley was easy to understand, including static and dynamic message signs, and boarding and alighting seemed simple enough. The double-decker Coaster rail cars were comfortable and attractive, and travel was as rapid as on the freeway despite a largely single-track alignment.*

*We noted that the trolley, which operates along local streets in and around the downtown and “Old Town” areas and along an existing railroad bed in many other portions of the county, requires signalization at grade crossings, preempting adjacent signals and delaying nearby traffic.*

*Connections between the various rail lines can be easily made at a series of intermodal centers near downtown San Diego. Farebox recovery ratios approach 60% for one of the San Diego trolley lines, with bus recovery ratios closer to 40%. Higher-density development was identified near transit stations near the downtown core. MTS has unified several transit agencies in the region, leaving only two in existence – MTS and NCTD – and both appeared to be successful. SANDAG now performs planning for MTS. Several representatives of SANDAG, the area’s regional planning agency, noted that incremental investments in transit are not as successful as making major investments in a regional system. The new TransNet local option, described elsewhere, includes significant monies for transit operations.*

*SANDAG has developed a series of pedestrian-bicycle guidelines as part of the region’s comprehensive plan. In addition, SANDAG administers a “smart growth” incentive program to encourage the development of walkable communities and complimentary development near transit stations.*

### Lessons learned:

- A region can exhibit both high-density, transit-oriented development along some corridors and low to moderate levels of density elsewhere, similar to that found in the Triangle region.
- Transit can be a timesaving as well as stress-saving alternative for users to sitting in traffic.
- Rail transit can significantly delay buses and cars on congested surface streets if grade separations are not provided or grade crossing improvements are not made.
- Convenient connections between systems are as important as the design of the individual systems.
- Although the initial capital investment of the trolley/LRT system is costly, the long-term operating costs are much lower than the bus system.
- Incremental planning and construction investments will not attract a large number of users.
- More investment in transit will be required to provide a reasonable travel option for travelers.
- A system-wide plan for regional fixed-guideway transit is necessary prior to implementation.
- Additional investments in at-grade intersection improvements as well as grade separations between highways and rail can improve traffic operations and safety for all users.

**2 – Transit and transit-oriented development (continued)**

**Opportunities for North Carolina**

- **Despite funding being available only to implement incremental steps, the public should be given the view of the fixed-guideway plan in its entirety (with proper caveats for adjusting to future growth) before the initial investment is made.**
- **Where resources permit, areas should consider accelerating subsequent phases through bonding in order to create a more comprehensive system for transit users.**
- **Funding for at-grade intersection improvements, as well as appropriate highway-rail grade separations, should be included as part of the initial or subsequent construction phases for regional transit projects.**
- **Commitment to allowing the land use patterns and density that is supportive of public transit is necessary to ensuring its long-term success.**



### **3 – Toll roads**

*Background and observations:*

*Orange County, California operates a countywide toll system over 50 miles in length that provides users with free-flow travel. The toll road looks like a regular freeway except for the toll signage and the high-speed toll plaza. Users with prepaid FasTrak transponders can travel at any speed through the toll plaza – actually a series of overhead gantries that read the transponder – and are billed automatically in a manner similar to that used for mobile telephones. Users without transponders on this roadway can pay cash. The cost of the FasTrak transponders in the west coast was reported to be approximately 50% of that used by the EZ-Pass system in the northeast.*

*The San Joaquin Hills toll road was reported as being the single most important economic development driver for new jobs along the corridor by creating both mobility and accessibility for the area. The timesavings over competing “free” but congested interstates are clearly enormous in Orange County, which borders Los Angeles. Los Angeles has been reluctant to implement toll roads thus far but Orange County has enjoyed tremendous success with their system.*

*It was unclear if or how integrated land use planning and transit development was coordinated with the development of the toll facility.*

Lessons Learned:

- Toll facilities can be funded by the private sector under a framework that provides a maximum rate of return to ensure reasonable toll rates and a reversion date on which the roads return to public hands.
- Toll roads can be a catalyst – in some cases the primary catalyst – for job opportunities in the adjacent corridor.
- Toll roads can relieve congestion and provide congestion alternatives for users in growing regions.
- Since tolls can be varied to coordinate supply and demand, toll options can provide users with a free-flow option with guaranteed trip times that motor fuels tax-funded roads cannot.



**Opportunities for North Carolina**

- **The selection and implementation process for proposed toll roads in North Carolina should be accelerated.**
- **Toll roads should implement high-speed toll collection lanes as the primary means of collecting revenues.**
- **North Carolina should consider the technologies and costs associated with both the California FasTrak and northeastern EZ-PASS systems before deciding.**
- **The state's urban areas should be permitted to develop their own regional toll systems for new regional freeways or restricted freeway lanes in order to complement the efforts of the NC Turnpike Authority. Any roads implemented would create accelerated opportunities for regional coordination and efficiencies with other modes.**



#### **4 – High-Occupancy Vehicle (“HOV”) and High-Occupancy/Toll (“HOT”) lanes**

*Background and observations:*

*The San Diego Association of Governments (Sandag) and the California Department of Transportation (Caltrans) operate the FasTrak program within the existing High-Occupancy Vehicle (“HOV”) lanes along I-15 in San Diego. The FasTrak program allows paying customers to access the HOV lanes by paying a fee and thereby provides a peak-direction alternative for single occupant users. In addition to providing a better use of available capacity by operating the restricted lanes as High-Occupancy/Toll (“HOT”) lanes, the shifting of traffic to the HOV lanes also serves to reduce congestion somewhat in the adjacent, general-purpose lanes.*

*Toll rates on the FasTrak lanes are raised or lowered to coordinate supply and demand and to guarantee free-flow travel in the restricted lanes. The revenues generated by the program-the only system in the country that provides dynamic pricing every 6 minutes-are used to fund the express “Breeze” bus that operates along the corridor. A proposed future project for I-15 will include bus rapid transit (BRT) stations along the corridor with direct access to the FasTrak lanes.*

Lessons learned

- “HOV” lanes provide free, high-speed travel to vehicles with two or more occupants, regardless of the ages of the occupants. Single-occupant users are not permitted to use HOV lanes when HOV restrictions are in effect.
- HOV lanes along the congested corridors often have available capacity that could be used without significantly reducing speeds in the restricted lanes.
- Operating restricted lanes as “HOT” lanes – by allowing single-occupant users to pay a toll to use the lanes while retaining free access for vehicles with multiple occupants – can provide revenues for transit operations in the corridor and a better use of available capacity in the restricted lanes.
- Since HOT lanes generate at least some revenue and provide a better use of existing capacity than HOV lanes, they are invariably a more efficient alternative than HOV lanes.
- Changing the entry price for paying customers helps to coordinate supply and demand under HOT lane operations and retain high-speed travel for users.
- Efficiency limits still exist, since trips that would have been taken in a single vehicle anyway (e.g. a parent and child) are still counted as “carpools” under either HOV or HOT operations and “crowd out” potential paying customers. These trips will reduce the financial resources available for both lane construction and transit operations and limit to a degree the ability to coordinate supply and demand, since raising the entry price under HOT operations only impacts those vehicles that are paying a toll.

**4 – High-Occupancy Vehicle (“HOV”) and High-Occupancy/Toll (“HOT”) lanes (continued)**

**Opportunities for North Carolina**

- North Carolina has approximately one month’s experience with HOV lanes in Charlotte. If excess capacity is observed in them – and, given case history from many other regions (Miami, Washington, Atlanta, Minneapolis-St. Paul, etc.), it appears reasonable that there will be at least some excess capacity at various times of the day – additional revenues could be generated by opening the restricted lanes to paying customers.
- All proposed HOV lanes in North Carolina should be permitted to operate as HOT lanes in order to provide additional revenues and options with a guaranteed level of service.
- Given the efficiency limits noted above and the need to enforce occupancy restrictions under both HOV and HOT frameworks, operation as “ValuExpress” lanes (one price for all vehicles regardless of occupancy, with the price itself encouraging carpooling at or above HOV-2 levels) should also be explored for restricted lanes in North Carolina.
- As noted under section 3, Toll roads, the state’s urban areas should be permitted to develop their own regional toll systems for new regional freeways or restricted freeway lanes in order to complement the efforts of the NC Turnpike Authority.



## **5 – Freeways, expressways, and ramp meters**

### *Background and observations:*

*San Diego County has a series of regional freeways – four interstate and four California state highway – just in and around the San Diego downtown area. We traveled on I-5, I-15, and California 163 – roads with varying cross sections. I-5 was an eight-lane freeway heading north from the downtown core towards Orange County. I-15 included a wider median with the FastTrak “HOT” lanes in the center for eight miles. The 163 (Cabrillo or Escondido Freeway) included a four-lane cross section that weaved through underpasses in Balboa Park. All were efficient. The urban freeway system – which is the urban free-flow travel system – is far more extensive than found in North Carolina’s urban areas, particularly the Triangle. The proposed extensions to the system only total 37 miles, which reflects the fact that the basic system is largely complete and that remaining opportunities close to the city are constrained by geography.*

*More than 200 “ramp meters” - traffic signals located along freeway onramps - control vehicular entry onto San Diego County freeways. Ramp meters regulate or “meter” vehicular access to freeways by allowing two vehicles to enter upon each short green indication displayed by the ramp meter traffic light during rush hours. This regulation dramatically improves the efficiency of freeway operations, thereby improving safety and reducing delays for motorists. HOV bypass lanes are provided at many of the ramps to reduce travel times for buses and carpoolers.*

*When conditions on the freeway mainline are uncongested, the signals remain dark. Initial complaints were received about the meters since they seem to impede flow to the freeway, but an effective outreach program has helped educate the public about the benefits of ramp meter operations to individual trip travel times as well as motorist safety. Similar experiences in the Minneapolis-St. Paul area were noted whereby ramp meters were turned off for 90 days in response to initial complaints but were subsequently reactivated after analysis showed that operations and safety had worsened with the meters dark.*

### Lessons learned

- Continued expansion of our freeway and expressway system – that is, our free-flow travel system for users – is a necessity for enhanced quality of transportation service in our urban areas.
- Freeways and expressways – which provide uninterrupted flow for travelers – do not have to be wide to be effective. A four lane grade-separated roadway with a narrow median and a lower speed limit can still provide enormous travel time savings compared to signalized boulevards, while being more attractive and “contextually sensitive” (complementary) to the adjacent environment than ten-lane freeways or massive intersections.
- Ramp meters can provide improved traffic flow along a region’s trunk freeway system at a fraction of the cost of widening an entire roadway.

*5 – Freeways, expressways, and ramp meters (continued)*

**Opportunities for North Carolina**

- Alternatives exist in congested corridors besides an eight-lane freeway and a Capitol or Independence Boulevard with many traffic signals.
- North Carolina’s urban areas should look for opportunities to implement “junior” freeways or expressways – grade separated roadways with four to six-lanes at most – which will provide free-flow travel for buses as well as cars and a more “contextually sensitive” solution that is complementary to the existing natural and built environment.
- Ramp meters should be studied and implemented for peak hour operation along existing and proposed freeways and expressways wherever travel timesavings and safety benefits will be realized along the state’s urban freeways.



## **6 - Overall investment in transportation**

### *Background and observations:*

*The San Diego region – with expanding biotech and military employment clusters like the Triangle and Fayetteville - will add 500,000 new jobs over the next 25 years. The region anticipates a slight reduction in overall traffic congestion and delays over the next several decades due to an extensive \$42 billion investment in multimodal transportation and an effective partnership between local, regional, and state governments, and the private sector.*

### Lesson Learned:

- Through strategic investments in mobility, healthy employment growth – an indication of a vibrant, attractive regional economy – can occur in metropolitan regions without exacerbating traffic congestion.
- It is possible to accommodate significant growth without worsening congestion in the transportation system.
- There is not a single solution for reducing congestion and maintaining mobility – a series of solutions, implemented through effective partnerships between local, regional, state and federal agencies and the private sector must be implemented to maximize opportunities for success.
- Speed in implementation of more options improves the chances of preserving and enhancing mobility.
- When local governments are empowered with the responsibility and resources for planning, constructing, and maintaining portions of their regional transportation system, local and state governments can cooperate with other public entities and the private sector to create the mobility solutions necessary to ensure economic vitality and sustain a world-class quality of life.

### **Opportunities and Challenges for North Carolina:**

- **If we are to compete on the national and global stage, North Carolina is going to have to make considerable transportation investments in our growing metropolitan regions – the economic engines of our state’s economy.**
- **The ongoing transfer to the state general fund of transportation resources should be stopped to prevent further deterioration of our urban and rural mobility infrastructure.**
- **Unless we are able to sustain or expand our mobility investments in regional economic engines such as Charlotte, the Triangle, the Triad, and other urban centers of North Carolina, we will indicate to potential investors that North Carolina is not serious about improving its economy and creating jobs for its citizenry.**

