



Issue Backgrounder

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It's Not Too Late: To Avoid Congestion After T-REX

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Summary

By using the power of the market to help the T-REX project, congestion-free, free-flow traffic travel can be made available to both car-poolers and single occupant drivers. Further, \$600 million can be pocketed by the state. By contrast, a decision to forego over a half billion dollars of desperately-needed transportation revenues will doom travelers to sit again in traffic congestion in the not-too-distant future.

T-REX

T-REX, the transportation improvement to I-25 through the Denver Technological Center, is due to be completed in 2006 and will provide the long overdue capacity enhancement to the corridor.

Scope

Before T-REX, three traffic lanes in each direction served the area. The project is currently estimated at \$1.7 billion¹, with the construction cost split roughly equally² between adding one traffic lane and light rail in each direction. T-REX will improve 19.7 miles of corridor.

1999 Election

The two transportation modes were implicitly joined by the November 1999 election. Voters authorized light rail construction contingent upon the Regional Transportation District's promise that the Federal government would cover at least 60 percent of the rail cost.

¹ "T-REX Budget Tops \$1.7 Billion," by Kevin Flynn, Rocky Mountain News, April 21, 2003.

² "RTD estimates that the total cost of the rail project will be about \$874 million." Quoted directly from the 1999 voter guide, as written by RTD.

TRANS

The highway portion was known as TRANS (Transportation Revenue Anticipation Notes) during the election. Because the Colorado Constitution restricts state debt, citizen approval was required. The revenues pledged to repay the debt are Colorado's allotment of Federal gasoline tax. The maneuver effectively captured funds to spend on transportation immediately, but consumed much of Colorado's future transportation funding. To gain votes from rural Colorado, TRANS includes a smattering of projects throughout the state.

Gas Tax Size

The money trail is not complicated. The price of a gallon of gasoline includes 22 cents tax that goes into Colorado's Highway Users Tax Fund (HUTF), amounting to nearly a billion dollars per year, and 18.4 cents that goes into the Federal Highway Users Trust Fund (FHUTF). Some Federal gasoline tax revenues are siphoned off to fund the Coast Guard, mass transit, ferry boats, historic renovation, river locks & dams, hiking trails, covered bridges, Amtrak, scenic byways, Appalachian redevelopment, the U.S. Department of Transportation bureaucracy and other things Congress deems meritorious (meaning a lot of pork-barrel projects that lack the ability to stand on their own merits, like the Robert C. Byrd Highway, the Robert C.

Byrd Federal Courthouse, the Robert C. Byrd Library, the Robert C. Byrd Federal Building, and the Robert C. Byrd Green Bank Telescope). The FHUTF runs a surplus (meaning that all of the funds generated are not allocated for transportation purposes) that is loaned to the Federal Government for general use. No one expects an increase in the income tax to repay these Trust Fund IOUs. Thus, the Federal gasoline tax is insidiously changing from a user fee into a general-purpose fund to be used by Congress at will. The remainder (about 62%)³ eventually gets back to the states, Colorado's annual allotment

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being in the range of nearly a half billion dollars, with the many infamous Federal conditions and mandates. Colorado will be penalized \$50,000,000 because the General Assembly did not yield to a Federal demand to lower DUI blood alcohol limits to 0.08 percent in 2003.

Colorado Network

Funds from the Colorado HUTF are shared with local governments that manage roads: 64 counties and 268 cities. Sometimes the General Assembly directs additional funding to transportation needs from the General Fund; local governments do the same. In general terms, the HUTF covers most costs to construct, operate, maintain and repair Colorado's 85,412 miles of roadway.

³ Calculated from CDOT 2002 Annual Report.

Gas Tax Application

Colorado's gasoline tax has been above the national average for several years until the average recently increased to 22.6 cents. The highest state gasoline tax is in Connecticut at 36 cents and the lowest is in Georgia at 7.5 cents. The Federal gasoline tax of 4 cents was installed in 1956 to fund construction of the interstate highway system. Its construction was completed in the mid-1980s⁴, nearly 20 years ago. Many argue that, particularly in a re-authorization year such as 2003, when the Federal Transportation legislation is re-approved, the Federal gas tax should end and the money should go directly to the states. In a nearly unanimous bipartisan vote, the Colorado General Assembly exercised leadership to this effect by passing Senate Joint Resolution 2003-42, calling on Congress to do just that. Other states may follow Colorado's leadership.

Funding Shortfall

In short, Colorado's transportation funds are largely used up. As TRANS is retired, the revenue stream will continue to be slowly eroded by improved fuel economy, rising costs, and diversion to projects that don't significantly enhance mobility. The erosive effects of the combination of these three forces is that transportation funding will probably diminish by one-half to three-quarters over the next 20 years. A transportation-funding crisis is here.

In order to avoid the depletion of transportation revenues, the gasoline tax rate would have to be massively increased. The politician who proposes doubling the gas tax every decade or less will quickly be out of office. The alternative is to phase out gas tax dependence and to replace it with a better, market-driven user fee: a toll system.

Electronic Toll Collection

Tollbooths became obsolete when electronic toll collection (ETC) equipment was invented in the 1980s. Currently, over half of all tolls in the U.S. are collected electronically, reducing collection costs by 90% and eliminating tollbooth queues and accidents. A transponder in the vehicle is read and the toll is assessed instantly to the user's account. E-470 offers an ETC payment option called Express Toll.

As more or fewer vehicles use the system, the toll rate increases or decreases accordingly.

Variable Tolls

ETC also makes variable-rate tolls more practical to implement. Variable tolls change with demand on the system and are displayed on a message board, so individual drivers may consider their schedule and weigh the urgency of their travel against the current toll. As more or fewer vehicles use the system, the toll rate increases or decreases accordingly. Variable tolls will be used to insure that the toll road never becomes congested, when the HOV lanes on I-25 North of Denver are opened to non-HOV traffic.

⁴ Senate Joint Resolution 2003-042 was supported by 97 of Colorado's 100 legislators.

Tragedy of the Commons in Transportation

Tolls are a better user fee than the gasoline tax because the user experiences the cost at the same time the benefits are delivered. The gasoline tax finances a system that is presented to and perceived by users as free. Those able to use up more of the system, gain disproportionate benefits at the expense of others. This is the “tragedy of the commons” manifest in transportation. “Tragedy of the commons” was coined to describe events in Scotland. Shepherds had a common pasture. The herders reserved their own pastures to use last, thus gaining personal benefit at the expense of others. The common pasture soon became overgrazed and useless. Similarly, everyone is equally entitled and too many seek to use the highway system at the same time. This causes system breakdown, whereby each additional user imposes costs upon other users without experiencing costs personally. The reality is that units of space on the highway system are not all equal in value. Clearly, because many people seek to use the system during the rush hour, the system has more value then. This reveals that “traffic congestion” is not the correct term. When “traffic congestion” is mentioned, people actually mean “tragedy of the commons in transportation” or, in other words, “failure of collectivism.”

Injuring consumer-taxpayers to benefit some petty political end or to sustain the status quo is no solution.

Bureaucratic Advocacy

Because bureaucracies do not reform themselves or offer serious innovation, advocacy for bureaucratic remedies is all we can expect from. The bureaucratic insistence on bigger common pastures (more free highways) or different groundcover (transit) will not solve the “traffic congestion tragedy.” Instead, a means of allocating scarce resources must be invented. Nothing else will increase mobility or unlock traffic congestion permanently.

Misdirected Incentives

The gasoline tax misdirects the incentives. When the Federal gasoline tax was under debate in the 1950s, President Eisenhower and his transportation chief, Thomas H. MacDonald, were at odds. Eisenhower wanted the interstate highway system financed by tolls; MacDonald wanted the gasoline tax. Within the context of those times and with the goal to accelerate the development of ancillary transportation support systems, such as auto manufacturing, gasoline production, and distribution, the gas tax was the right incentive for that time. However, America’s transportation infrastructure is now mature. There is no need to construct millions of miles of new roadway. The issue is not development, but efficient management. For the future the gasoline tax is inadequate. Now is the time to recognize that Eisenhower had the correct

long-term view. Tolls align incentives for better system use in the future.

Lower Transportation Costs With Tolls

Traffic jams prove that more people want to use the system at certain times. Before T-REX, traffic volume counts show that 43% of the capacity was unused.⁵ Restated: the most congested road in all of Colorado could have moved nearly twice as many vehicles as it actually did move. With the creative will and political courage to implement variable tolls, far more use can be achieved from the same infrastructure.

More service from the same infrastructure will result in the need to add less infrastructure and to lower average transportation costs to all users.

T-REX Future Traffic Congestion

When T-REX opens, its effect on traffic congestion is not yet clear. The addition of one lane to three existing lanes obviously increases highway capacity by 33%. Because 80% of light rail users are former bus riders⁶, LRT has no significant beneficial impact on congestion in the corridor. According to CDOT, traffic volume in the corridor increases at 2.6 percent

per year⁷. Compounded to 2006, normal traffic growth would immediately consume 29% of the 33% added capacity. Many unpredictable variables affect what will actually happen, such as latent demand, induced traffic and driving behavior habit modification during the construction period. Users should observe a short period of improved traffic

flow before congestion returns to pre-T-REX levels.

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Is Choice Bad?

Would it be a big concession to allow T-REX corridor users the choice to drive free of traffic congestion? After all, that is what they bargained for in return for putting up with years of construction.

Restricted Lanes

Everyone in Colorado would also benefit from converting the new lane to a restricted lane before it is open. Free flow and greater movement of people can be assured indefinitely. Restricted lanes are not new. Hundreds of miles of restricted lanes exist all over the U.S. The most common type of restricted lane is the High Occupancy Vehicle (HOV) lane. HOV lanes were devised to offer an incentive

⁵ "Let Those Who Receive the Benefits Pay the Costs," Independence Institute Issue Paper IP-13-99, September 15, 1999, by Stephen R. Mueller and Dennis Polhill, pages A-1 and A-2.

⁶ 80% is a conceptual average published frequently in various technical sources. In the January 1995 Regional Transportation District Performance Audit, RTD reported to the State Auditor on page 47 that 89.5% of Denver LRT users were former bus riders. The Auditor was critical of RTD for failing to be forthright with the public and the General Assembly on this point. RTD's May 1995 "Light Rail Passenger Transit Study" page 5 reported that 73% of light rail riders were former bus riders.

⁷ Fax from CDOT of supporting traffic count data and compounded growth rate calculation. CDOT's numbers conform with those in the DEIS (Draft Environmental Impact Statement).

for people to car pool. In full use, an HOV lane would move more people than a General Purpose (GP) lane. However, HOV lanes are generally considered failures because they rarely achieve full use, and in most instances move fewer people than a GP lane. Bus Rapid Transit (BRT) is another name for a dedicated bus lane. BRT and HOV together do not fully use a lane and, in that respect, are compatible. BRT is popular because the buses can mix with general traffic when the restricted lane ends and deliver riders closer to their destinations, reducing transfers, waiting, and trip times. BRT is also comparatively inexpensive. The fact that LRT operates in the T-REX corridor does not preclude BRT's potential effectiveness.

LEVs

Other restricted lane users include Low Emitting Vehicles (LEV), Ultra Low Emitting Vehicles (ULEV), Inherently Low Emitting Vehicles (ILEV), and more. All of the LEVs combined are sparse in numbers and contribute trivially to achieving full use. The *only* way to achieve full use and, at the same time, to maintain free flow in a restricted lane, is to permit access by Single Occupant Vehicles willing to pay a toll. The toll rate varies based on the number of vehicles currently in the lane. Thus, to insure free flow, the toll might sometimes be high and other times be low.

\$600 Million

Driver behavior in response to traffic conditions inside and outside both the free lanes and toll lanes is quite difficult to predict and history is limited in other projects from which informed assumptions can be gained. Actual behavior data has been compiled by California Polytechnic University under contract with the U.S. Department of Transportation on California's SR-91 HOT lane demonstration project. Assuming similar behavior by Colorado drivers, the additional lane in T-REX as a HOT lane would generate about \$46 million in 2006⁸ and \$51 million in 2011.⁹ Reducing revenues by 20% to account for operating expenses, the remainder of \$40 million per year would support a capital debt of over \$600 million.

Summary

In the simplest of terms, CDOT can choose:

- *Alternative One* - Proceed on the current path, opening all lanes to general traffic, offering a few years of minor improvement in traffic flow, recovering no revenues and accepting that the corridor will be congested again in the future.

⁸ "Let Those Who Receive the Benefits Pay the Costs," Independence Institute Issue Paper IP-13-99, September 15, 1999, by Stephen R. Mueller and Dennis Polhill, table 7, page A-9.
⁹ IBID/same, table 8, page A-10.

- *Alternative Two* – Convert the new lane to a restricted lane, allowing it to be used by both HOV and HOT vehicles, maximizing the movement of people and vehicles, capturing several hundred million dollars, and insuring that the corridor will operate with free flow and free choice indefinitely.

Conclusion

Only in the political world do such contrasting alternatives require much contemplation. This is the decision: Alternative One (less for more) or Alternative Two (more for less).

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