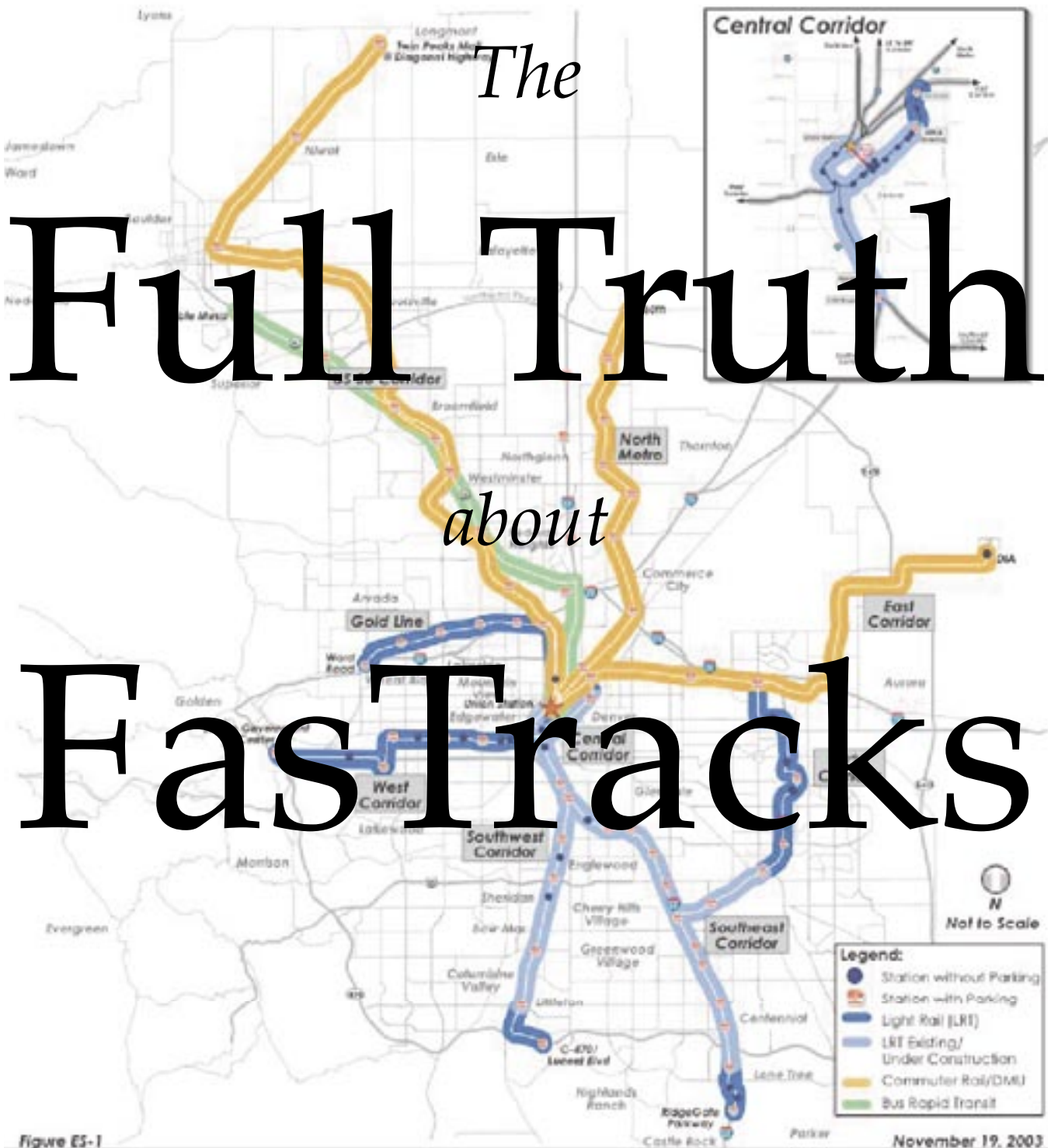




Center for the  
**American Dream**  
of mobility and home ownership



by Randal O'Toole

Issue Paper 7-2004—June 2004

## The Full Truth About FasTracks

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The Independence Institute's Center for the American Dream works to give people freedom of choice in land use and transportation while protecting urban livability and environmental quality. The "dream" of the Center for the American Dream is affordable homeownership, mobility, a clean and livable environment, and personal freedom for all Americans, not just an elite few.

The Center for the American Dream does not advocate that people drive everywhere or take public transit, live in low-density suburbs or high-density urban centers. All of these are legitimate lifestyles. The Center does oppose coercive planning efforts that attempt to engineer lifestyles through subsidies, regulation, and limits on personal and economic freedom.

Randal O'Toole, the author of this report, is also the director of the Center for the American Dream. As the author of *Reforming the Forest Service* and *The Vanishing Automobile and Other Urban Myths*, Mr. O'Toole has a national reputation in environmental policy analysis. In addition to doing research on a variety of urban and rural environmental issues, Mr. O'Toole has taught at Yale, the University of California at Berkeley, and Utah State University.

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## Executive Summary

*FasTracks supporters tell voters that rail transit will reduce congestion, clean the air, and promote economic development. In reality, it won't do any of these things; it will just waste at least \$8.3 billion of the taxpayers' money.*

Four years ago, the Union Pacific Railroad bought all 16,700 miles of the combined Rio Grande and Southern Pacific railway lines for \$4.1 billion. At an average cost of less than \$250,000 per mile of track, the purchase also included hundreds of locomotives, thousands of rail cars, and numerous other properties.

If voters approve, Denver's Regional Transit District (RTD) says it will spend \$4.7 billion building about 240 miles of track and 36 miles of busways, plus buy 159 rail vehicles, 10 buses, and a few other properties. This represents an average cost of \$34 million per mile—140 times as much as the Union Pacific paid for each mile of Southern Pacific and Rio Grande track!

To sell this plan to Denver voters, RTD and its supporters have greatly exaggerated the benefits of rail transit while understating the costs. Supporters say FasTracks will cost-effectively reduce Denver's congestion, increase job accessibility, clean the air, and promote economic development. In fact, it will do none of these things.

A clearheaded look at RTD's FasTracks plans and DRCOG's analysis of those plans reveals the truth: RTD's proposed rail lines will cost more than almost any public works project in Denver history, yet they will accomplish very little.

- FasTracks is far too expensive:** FasTracks will cost taxpayers at least \$8.3 billion, and possibly much more. Between now and 2025, the sales tax increase required for FasTracks will cost more than \$2,000 for each Denver-area resident. The 2025 sales tax per resident will be \$144, in exchange for which residents will get an average of just six more transit rides that year—meaning each new ride will cost \$24. Including all construction and finance charges, FasTracks will cost billions more than stated by RTD, and the tax increase is likely to never sunset.
- FasTracks won't relieve congestion:** DRCOG says FasTracks will take less than 0.5 percent of cars off the road each weekday, and only 1.4 percent during rush-hour. Even in FasTracks corridors, where the system is supposed to have the greatest effects, rail transit will increase rush-hour speeds an average of less than 1 mile per hour.
- FasTracks isn't fast:** The proposed FasTracks light-rail lines will average just 24 miles per hour. Commuter-rail lines will average 41 miles per hour, but the bus-rapid transit line will average 51 miles per hour. RTD also plans to operate the buses far more frequent-

Figure ES-1: Rush-Hour Travel Without FasTracks

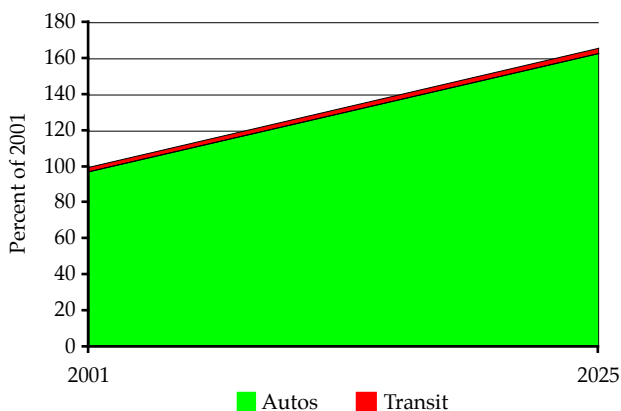
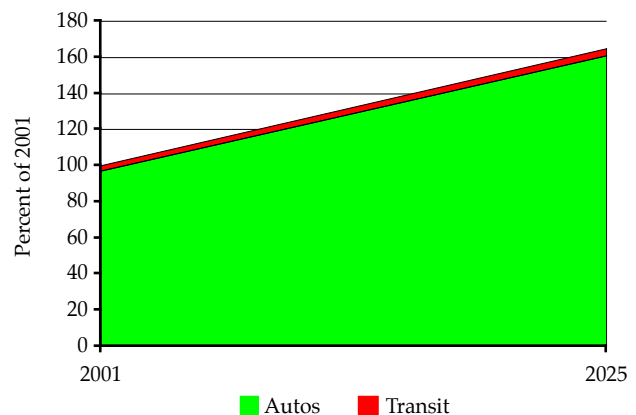
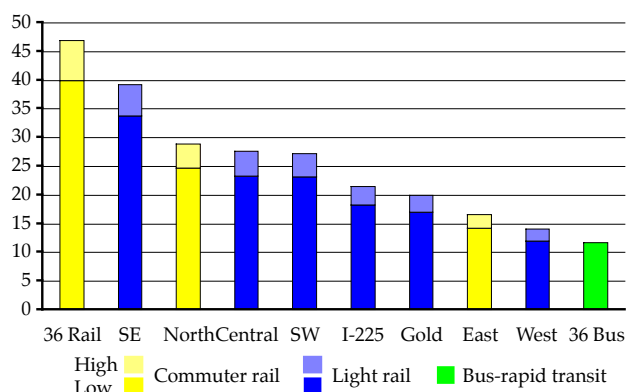


Figure ES-2: Rush-Hour Travel With FasTracks



*These charts show that FasTracks will take just 1.4 percent of rush-hour cars off the road. If you can't see the difference, then why spend billions of dollars building new rail lines? If you can see the difference, is it really worth more than \$2,000 per resident? Source: DRCOG, Review of FasTracks, p. 24.*

Figure ES-3: Total Cost in Dollars Per New Rider



RTD says that bus-rapid transit will cost less per rider to build and less to operate than any proposed rail line. Source: RTD, FasTracks Plan, appendix E.

ly, shortening the wait typical transit riders must endure at stations.

- **FasTracks will pollute the air:** DRCOG says FasTracks will reduce carbon monoxide, hydrocarbon, and particulate emissions by less than 1 percent, which is nearly insignificant. On the other hand, FasTracks will *increase* emissions of nitrogen oxide, an ozone precursor, by 2.66 percent. This is significant as ozone is the only pollutant for which Denver still violates federal air standards.
- **FasTracks won't help low-income people:** FasTracks is designed to attract middle-class auto drivers out of their cars. But Denver's real mobility problem is that nearly 60,000 households in the region, most of them poor, lack access to an automobile. FasTracks will

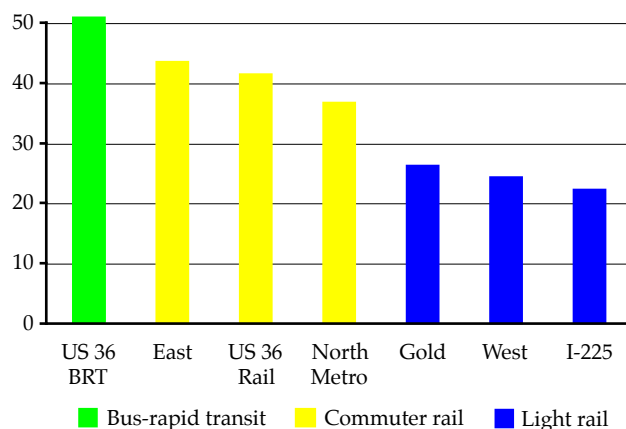
do little to help these people. The high fixed cost of repaying loans could even threaten what little mobility RTD's bus system now provides them, especially if a recession leads to sales tax shortfalls, forcing RTD to cut bus service as has happened in San Jose.

- **FasTracks will harm neighborhoods:** Local officials talk about "economic development," but what they often mean is clearing existing homes and businesses and replacing them with high-density transit-oriented developments. Experience in other cities indicates that such developments will require further subsidies and that, because most trips from these developments are by auto, they will add to corridor congestion.

While FasTracks will not reduce congestion, clean the air, or improve regional mobility, its high cost precludes other projects that can measurably improve traffic flows and air quality. RTD's FasTracks plan requires \$932 million in federal funds. If these funds were spent instead as seed money for a regional network of high-occupancy/toll lanes and bus-rapid transit, auto drivers would enjoy far less congestion and transit riders would get faster, better service. Moreover, this could be done without new taxes.

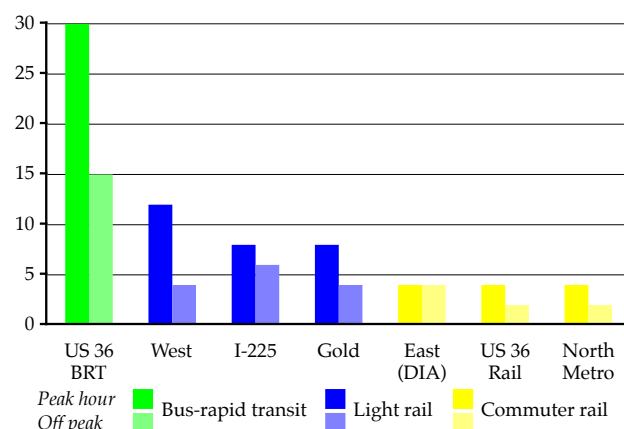
Voter approval of FasTracks will result in high taxes, congestion, and gridlock. Voter rejection will tell RTD, DRCOG, and the Colorado Department of Transportation that Denver wants effective, low-cost solutions to congestion, not an expensive rail system that few people will use.

Figure ES-4: Average FasTracks Speeds



RTD says bus-rapid transit is the only transit mode that will operate faster than 50 miles per hour. Source: RTD, FasTracks Plan, p. 2-6.

Figure ES-5: Frequencies in Trips Per Hour



RTD also says it will operate bus-rapid transit far more frequently than any form of rail transit. Source: RTD, FasTracks Plan, figures 1-2 through 1-10.

# 1. FasTracks Will Waste Taxpayers' Money

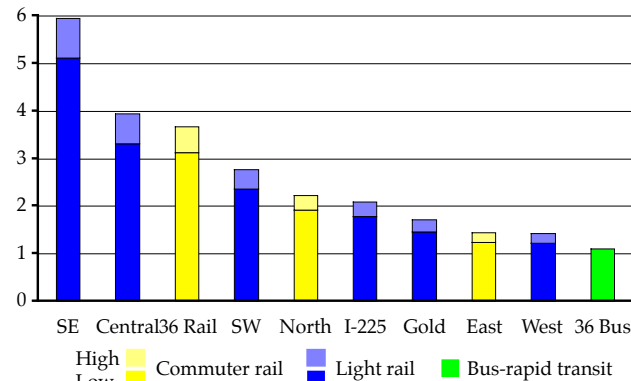
*Each of the FasTracks rail lines would cost more to build and more to operate per rider than the single bus-rapid transit line. Taxpayers in 2025 will pay \$24 for every new ride generated by FasTracks and \$11,500 per year for every new transit commuter.*

How much is it worth to taxpayers to have people ride rail transit instead of bus transit? RTD says each ride on all of the rail lines proposed in FasTracks will cost taxpayers far more than the average cost per bus ride today, and most will cost two to four times as much. The lowest-cost FasTracks line is the bus-rapid transit line, while the rail lines are significantly more expensive.

Capital costs for the bus-rapid transit line are much lower than for the rail lines (figure 1.1). The operating costs for bus-rapid transit are also lower despite the fact that RTD plans to operate it much more frequently (figure 1.2). Rail advocates often claim that rail lines cost less to operate because they only require one driver for large numbers of people. But operating costs include more than the cost of the drive. By choosing bus instead of rail, RTD could have saved taxpayers about \$30 million in operating costs per year in 2025.

The capital costs in figure 1.1 are fully amortized using a formula specified by the Federal Transit Administration. RTD claims that its existing light-rail line costs less, including both capital and operating costs, than its average bus line. However, RTD did not make this calculation using the standard Federal Transit Administration formula. Even if it had, rail costs should not be compared with the average bus line but

Figure 1.2: FasTracks Operating Costs Per Rider



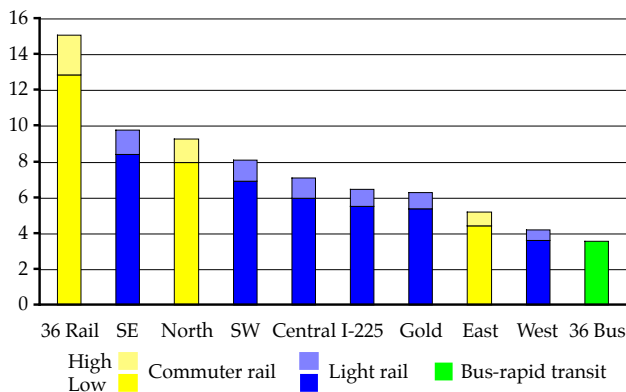
Source: RTD, FasTracks Plan, appendix E

with bus routes in major corridors. Because they are more heavily used, some of these bus routes come close to breaking even. RTD's plan would replace those routes with expensive rail transit.

How much is it worth to get one car off the road for one trip? If congestion reduction is a goal, then the cost per rider is less important than the cost per *new* rider, which is the cost of attracting an auto driver onto transit. The Federal Transit Administration has a standard formula for calculating this cost, but RTD has not bothered to calculate the cost per new rider for FasTracks.

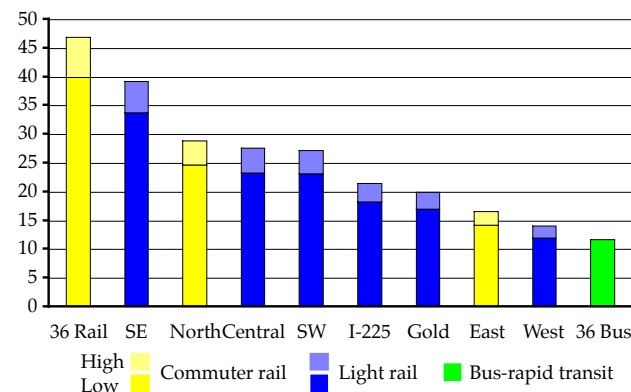
RTD says more than 60 percent of the riders on its existing light-rail line are former bus riders. The planning documents for the West light-

Figure 1.1: FasTracks Capital Costs Per Rider



Source: RTD, FasTracks Plan, appendix E

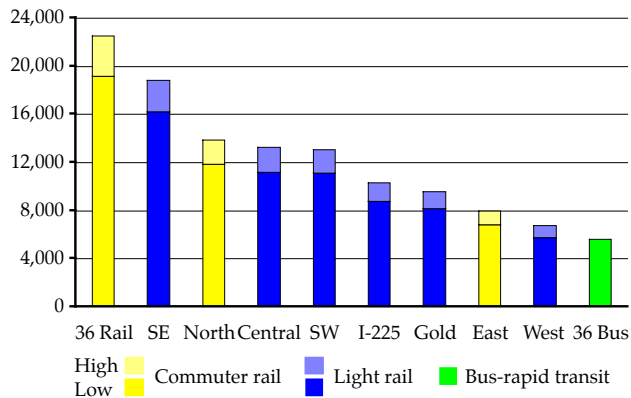
Figure 1.3: FasTracks Cost Per New Rider



Source: RTD, FasTracks Plan, p. 2-24, assumes 60% of riders are former bus riders.



Figure 1.4: Annual Cost Per New Commuter



Source: Figure nine, assumes 240 round trips (480 trips) per year.

rail line estimates that 37.5 percent of the riders on that line will be new riders. This percentage will probably hold for the other routes as well.

The cost per new rider can be estimated by assuming that 40 percent of FasTracks riders will be new riders. As shown in figure 1.3, the costs range from a minimum of \$13 to nearly \$30. By comparison, hiring a stretch limousine to take eight people to work would cost about \$150, or less than \$20 per person.

Figure 1.4 shows that the annual cost of getting one auto commuter to switch to transit ranges from more than \$3,000 to nearly \$7,000. This is considerably more than the cost of leasing hybrid-electric automobiles for each of those commuters, which would do far more than rail transit to reduce air pollution.

Another way of calculating the cost per new ride is that each resident will pay \$144 in extra sales taxes per year in 2025 in exchange for which they will ride transit 6 more times, or an average of \$24 per new ride. That works out to an annual cost of more than \$11,500 per new commuter.

Rail advocates often say that rail transit saves land and money because a single rail line can carry as many people as an eight-lane freeway. Reality is far different from this fantasy.

New freeway lanes typically cost about \$10 million per mile. The T-Rex project includes about 46 miles of new lanes plus the reconstruction of numerous bridges and is costing \$17.3 million per lane mile.<sup>1</sup> In contrast, RTD estimates that FasTracks light-rail lines will cost \$21.5 million per mile of track.<sup>2</sup> Yet each mile of RTD's Southwest rail line carries less than 15 percent as many passenger miles per day as the average lane mile

of Denver freeway.<sup>3</sup> That makes freeway lanes more than eight times as cost effective at moving people as light rail.

Nationwide, the average mile of light rail carries only 16 percent as many passenger miles per day as a typical Denver freeway lane mile. The most heavily used light-rail system, in Boston, carries only 35 percent as many passenger miles per mile as a Denver freeway lane mile. At best, light rail costs 20 percent more than freeway lanes and carries two-thirds fewer people, which makes freeways 3.5 times as cost effective as rail.

RTD expects its proposed commuter rail lines will cost only a little more than \$10 million per mile.<sup>4</sup> But, excluding New York City, the average mile of commuter-rail line nationwide carries less than 10 percent as many passenger miles per day as the typical Denver freeway lane mile. HOT lanes would thus be several times more cost effective at moving people as commuter rail. Since a mile of rail line takes about the same amount of space as a lane mile of freeway, rail transit is much more land intensive than highways.

One reason Denver's light rail is so cost ineffective is that its cars carry so few people. RTD reports that its light-rail cars operated nearly 3 million vehicle miles in 2002 but carried only 45 million passenger miles.<sup>5</sup> On average, then, each light-rail car carried only 15 people. If the cars seem full at rush hour, they must run nearly empty the rest of the day. Spending billions to build rail lines that will run empty much of the time represents an incredible waste of resources.

Transit riders need efficient transportation, not rides that will cost taxpayers \$24 each. Auto users also need congestion relief. As chapter 3 will show, FasTracks will no more relieve congestion than it will provide efficient transportation.

## References

1. Stacy Stegman, Colorado Department of Transportation, interview, June 10, 2004.
2. RTD, *FasTracks Plan*, p. 2-19.
3. Federal Transit Administration, *National Transit Data Base 2002* (Washington, DC: US DOT, 2004), tables 19 & 23; Federal Highway Administration, *Highway Statistics 2002* (Washington, DC: US DOT, 2003), table HM-72.
4. RTD, *FasTracks Plan*, p. 2-19.
5. FTA, *National Transit Data Base 2002*, table 19.

## 2. RTD Has Understated FasTracks' True Cost

*The sale tax increase needed to pay for FasTracks will cost each metro area resident \$2,000 through 2025. RTD's acceleration of FasTracks construction will cost taxpayers at least \$2.7 billion. The costs don't end there, as the increased tax may never sunset.*

FasTracks supporters say the new sales tax will cost each resident only a few dollars a month. What they don't say is that RTD is counting on tax revenues increasing at four times the rate of population growth, so by 2025 the cost per person will be nearly three times as great as in 2005.

As shown in table 2.1, sales taxes per resident will increase from around \$60 per year in 2005 to \$144 in 2025. By 2025 the increased tax for FasTracks will have cost more than \$2,000 per resident for rail rides they will rarely, if ever, take.

Between 2005 and 2013, when the first FasTracks rail line would open, RTD would collect well over \$1.8 billion from the 0.4 percent sales tax. Accounting for population growth, the increased sales tax will cost more than \$640 per resident before anyone gets to ride a single FasTracks train.

Counting federal and local funds, the full cost of FasTracks per resident will be close to \$3,000. Assuming revenues and population continue to grow at forecast rates through 2048, when the FasTracks debt is finally repaid, sales tax collections will have totaled nearly \$8,000 per resident.

RTD responds that residents will not pay all of the sales tax because businesses and visitors will also pay the tax. This is spurious because taxes paid by businesses are eventually passed on to consumers. Higher taxes on visitor purchases will reduce visitor expenditures that would otherwise go to local businesses and their employees.

FasTracks supporters say the 0.4 percent sales tax needed to build FasTracks will sunset when construction is complete. However, the ballot question doesn't guarantee this: It states the sales tax will remain in effect "until such time as all debt is repaid when the rate of tax will be decreased to that amount necessary for the continued operation of the system."

This raises two questions: How long will it take to repay the debt? And, what is "necessary for the continued operation of the system?"

Table 2.1  
Sales Taxes Per Person

Year	Sales Tax Revenues (millions)	Metro Area Population (millions)	Tax Per Resident (dollars)
2005	\$158	2.62	\$60
2006	166	2.66	63
2007	176	2.70	65
2008	186	2.75	68
2009	196	2.79	70
2010	208	2.83	74
2011	221	2.88	77
2012	235	2.92	80
2013	250	2.97	84
2014	265	3.01	88
2015	282	3.06	92
2016	300	3.11	96
2017	318	3.16	101
2018	338	3.21	105
2019	359	3.26	110
2020	382	3.31	115
2021	406	3.36	121
2022	431	3.42	126
2023	458	3.47	132
2024	486	3.52	138
2025	517	3.58	144
Total	6,338		2,010

Source: RTD, *FasTracks Financial Plan*, pp. 2, 5; DRCOG, *Review of FasTracks*, p. 37.

RTD's 1997 "Guide the Ride" plan called for most of the rail system to be built with sales taxes on a "pay-as-you-go" basis. RTD planned to borrow only about \$1 billion, which would require taxpayers to pay about \$900 million in interest.<sup>1</sup>

To placate suburban officials, none of whom wanted "their" rail lines to be the last to be built, RTD accelerated the rate of construction for the FasTracks plan. This purely political decision requires much more borrowing, and RTD is asking taxpayers for permission to borrow \$2.5 billion more than in 1997. At current interest rates, the financial charges on these loans will total at



least \$3.6 billion. This means taxpayers will pay at least \$2.7 billion in extra sales taxes so RTD can stroke the egos of suburban officials. If interest rates rise, finance charges could be much higher, further increasing the cost of ego-stroking.<sup>2</sup>

RTD's financial plan schedules loan repayments through 2048. Will it really take four decades to pay off FasTracks loans? RTD has projected revenues and capital and operating costs through 2025. From now until 2017, when FasTracks construction is complete, revenues just keep up with costs. After construction is complete, however, revenues grow much faster than costs. By 2025, RTD projects that its cash balances will increase from about \$212 million in 2018 to more than \$1.05 billion at the end of 2025.<sup>3</sup>

RTD's projections end in 2025, but using RTD's assumptions about inflation and revenue growth beyond 2025, RTD will have enough cash to repay all loans by 2030—even if interest rates increase to 12 percent. If RTD chooses instead to repay the loans on the proposed schedules, by 2048 it will accumulate cash balances exceeding \$30 billion! What would RTD do with all this money?

One hint may be in the phrase "necessary for the continued operation of the system." As noted in chapter 1, rail transit will cost more to operate than bus-rapid transit. RTD could decide other things are also needed to operate the system.

First, RTD has made "future vision" plans for improvements it wants to make to the FasTracks system after 2025. These include \$511 million for park-and-ride stations and double-tracking of some single-track rail lines, plus \$360 million of improvements to Denver Union Station (on top of \$200 million in improvements built into FasTracks).<sup>4</sup> Technically, these are capital improvements, but RTD could easily decide that more parking, double tracking, and other future vision plans are needed to operate the system.

Second, rail lines must be largely rebuilt every 25 to 30 years. Vehicles, tracks, and wires must be replaced; roadbeds and stations must be refurbished. This can cost almost as much as the original construction.

Metro, Washington, DC's transit agency, built most of its subway system in the 1970s and 1980s at a cost of about \$10 billion. Today, reports the Washington Post, "Metro is lapping up tax dollars to keep its aging system running."<sup>5</sup> "In the

next 20 years," says the Post, "the transit agency must spend more than it cost to build the 103-mile subway system just to maintain the rail and bus lines it now operates. Metro doesn't know where it will find all of those billions."<sup>6</sup>

Denver's first light-rail lines will need refurbishment by 2025, and the rest will come soon after. Certainly, RTD's board will be able to argue that such reconstruction is needed "for the continued operation of the system."

Another potential cost is increased finance charges if interest rates rise above today's low levels. RTD's FasTracks Financial Plan of January, 2004, states, "In the [1999] Southeast Corridor Financial Plan, we recommended, and the voters adopted, a TABOR limit that included an estimate of debt service calculated at 12%." At that higher interest rate, the plan says, finance charges would be about \$3 billion more than acknowledged in the ballot question.

However, the 1999 ballot question does not mention 12 percent interest rates and the debt it does mention works out to less than 4 percent interest if paid over 30 years. The 1999 question does allow "refunding bonds issued at a lower or higher rate of interest." Since the FasTracks measure includes similar language, RTD may be prepared to pay significantly higher finance charges than are identified in the ballot question.

Rail's higher operating costs, the cost of accelerating construction, higher interest rates, the future vision plan, and the need for periodic reconstruction are not mentioned in the FasTracks ballot question. Between these costs, it is likely that the long-term costs of FasTracks would be billions more than advertised by FasTracks supporters.

## References

1. RTD, *Ballot question for Guide the Ride*, 1997.
2. RTD, *FasTracks Financial Plan*, p. 15.
3. RTD, *FasTracks Plan*, volume 4, pp. 4-5.
4. RTD, *FasTracks Plan*, appendix L, p. 1; appendix U, "Denver Union Station," p. 3.
5. Lyndsey Layton, "Coming to a Curve: Region's Subway System Begins to Show Its Age, Limits," *Washington Post*, March 25, 2001, p. A-1.
6. Lyndsey Layton, "Crowds Could Derail Decades of Progress," *Washington Post*, March 26, 2001, p. A-1.

### 3. FasTracks Won't Relieve Congestion

*The biggest lie about FasTracks is the claim that it will relieve Denver's growing congestion. In fact, DRCOG says FasTracks will take only 0.5 percent of cars off the road, which is the amount Denver traffic grows every three months.*

The biggest lie about FasTracks is that it will help relieve Denver's growing traffic congestion. Supporters of FasTracks advertise rail transit as a "cure for the rush hour blues"<sup>1</sup> They say FasTracks will "reduce projected traffic growth when it is needed most, during rush-hour commutes."<sup>2</sup> FasTracks is purported to offer Denver residents "savings" equal to some unspecified part of the cost of congestion, estimated to be \$1.5 billion per year for the metro area.<sup>3</sup>

In fact, a recent analysis of FasTracks by DRCOG found that building FasTracks would take less than 0.5 percent of cars off the road.<sup>4</sup> Without FasTracks, DRCOG estimates, people will drive 95.54 million vehicle miles per weekday in the Denver region. FasTracks would take 474,000 of those miles, or less than 0.5 percent, off the road.<sup>5</sup> FasTracks would increase transit's share of regional passenger travel from 2.27 percent without FasTracks to 2.85 percent with it.<sup>6</sup> The reduction in auto driving is less than 0.5 percent because not all of those additional transit riders would come from single-occupancy automobiles.

How about during rush hour, "when it is

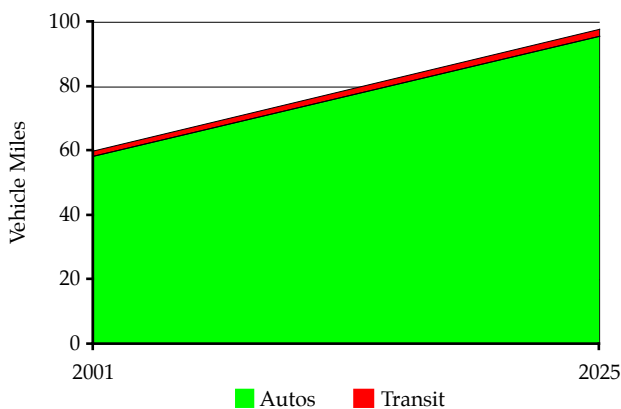
needed most"? DRCOG found that FasTracks would increase transit's share of travel from 2.7 percent to 4.1 percent.<sup>7</sup> Again, since not all of those new transit riders would come from single-occupancy vehicles, FasTracks would take less than 1.4 percent of cars off the road during rush hour.

DRCOG expects Denver's traffic to grow by 0.5 percent every three months. That means FasTracks—which will take twelve years to complete—will offer only three months of congestion relief over the course of a day and less than nine months of congestion relief at rush hour. Is taking less than 1.4 percent of rush-hour traffic off the road worth \$4.7 billion?

RTD's response is that FasTracks will offer significant congestion relief in the region's most congested corridors. In the average corridor, RTD says that transit's share of 2001 travel was a little more than 11 percent, while FasTracks is projected to increase transit's share to 22 percent.<sup>8</sup>

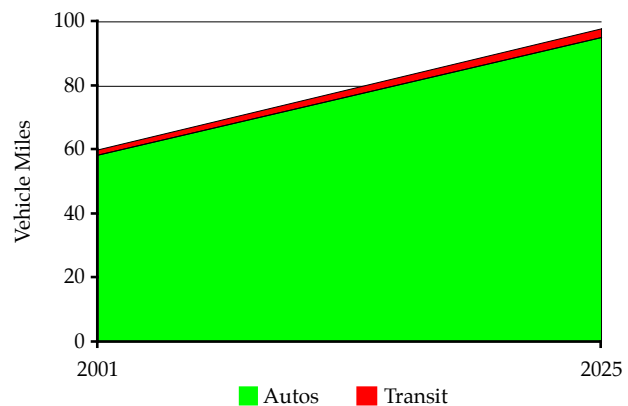
This does not mean there will be less congestion in any of those corridors than there is today. If traffic in those corridors increases by the regional average of 63 percent, then increasing transit's

Figure 3.1: Weekday Travel Without FasTracks



Source: DRCOG, Analysis of FasTracks, p. 23.

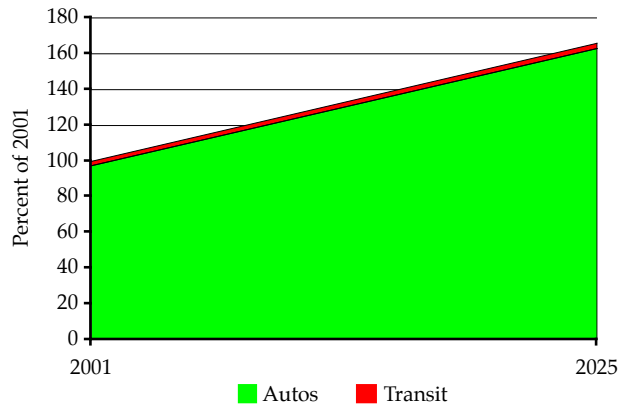
Figure 3.2: Weekday Travel With FasTracks



Source: DRCOG, Analysis of FasTracks, p. 23.

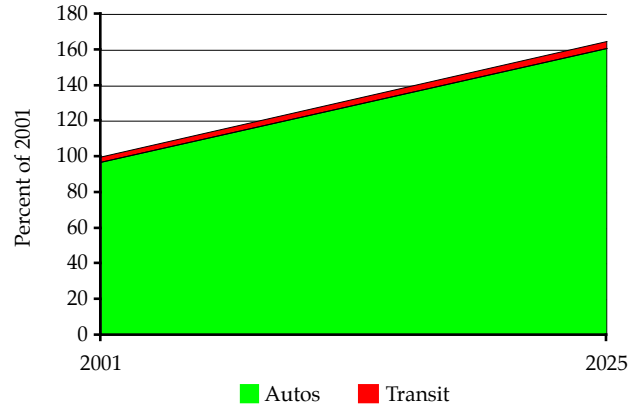
*Can you tell the difference between these two charts? The one on the right shows that FasTracks increases transit's share of weekday travel by 0.5 percent. Is that worth \$4.7 billion?*

Figure 3.3: Peak Travel Without FasTracks



Source: DRCOG, Analysis of FasTracks, p. 24.

Figure 3.4: Peak Travel With FasTracks



Source: DRCOG, Analysis of FasTracks, p. 24.

Even if you can tell the difference between these two charts, which show that FasTracks increases transit's share of rush-hour travel by 1.4 percent, is it worth billions to get that trivial result?

share from 11 to 22 percent still leaves 41 percent more traffic. In the West and Gold corridors, where RTD anticipates the greatest improvement in transit's share of travel, auto traffic will still increase by nearly 30 percent.

Table 3.1

Corridor	Peak-Hour 2025 Auto Speeds in Miles Per Hour		
	2004 Speeds	2025 Without FasTracks	2025 With FasTracks
Central	23	14	15
East	38	29	30
Gold	21	12	13
I-225	30	33	36
North	24	11	11
Southeast	23	12	12
Southwest	19	10	10
US 36 Rail	26	15	15
US 36 Bus	26	14	15
West	26	16	17
Average	26	17	17

Source: RTD, FasTracks Plan, p. 2-31. 2004 auto speeds extrapolated from 2015 and 2025, p. 2-6.

Moreover, DRCOG's regional travel model, which RTD used to calculate the effects of FasTracks on corridors, fails to adequately account for the changes people will make in their home and work locations in response to congestion. Congestion is like water: it seeks a uniform level. If FasTracks managed to make some corridors less congested than others, people will respond

by altering their travel routes—and, over time, their home or work locations—to less-congested corridors. In the long run, FasTracks will not reduce rush-hour traffic in any corridor by much more than the regional average of 1.4 percent.

Even discounting the effects of people's responses to congestion, RTD's own numbers show that FasTracks will have a trivial effect on congestion in the various rail corridors. Table 3.1 shows RTD's projections of 2025 peak-period automobile speeds in each corridor with and without FasTracks. Average speeds in these corridors are expected to decline from 26 miles per hour today to just 17 miles per hour in 2025. FasTracks adds an average of less than 1 mile per hour to the 2025 speeds. That is hardly worth billions of dollars.

## References

1. Transit Alliance, "Cure for the Rush Hour Blues," video, available from [www.transitalliance.org](http://www.transitalliance.org).
2. Bena Nuñez and Rich McClintock, *Getting on the Fast Track to a Livable Denver Region* (Denver, CO: Environment Colorado, 2003), p. 5.
3. FasTracks Yes, "Benefits," [www.fastracks.org/benefits.cfm](http://www.fastracks.org/benefits.cfm).
4. DRCOG, *Review of the RTD FasTracks Plan* (Denver, CO: DRCOG, 2004), p. 23.
5. Ibid.
6. Ibid, p. 24.
7. Ibid.
8. Ibid, p. 23.

## 4. FasTracks Isn't Fast

*The very name "FasTracks" is deceptive, as none of the rail lines move people at auto-competitive speeds. The fastest FasTracks route is a bus line that will operate faster and more frequently than any of the rail lines. So why build expensive rail lines?*

Why doesn't FasTracks do more to relieve congestion? The simple answer is that none of the FasTracks rail lines operate at speeds competitive with automobiles, especially when counting the time spent waiting at stations.

When people hear terms such as "rapid transit" or "FasTracks," they may think of something like the French TGV or Japanese bullet trains, which go well over 150 miles per hour. While those are truly fast tracks, RTD's proposed rail lines for Denver could more accurately be described as *slow tracks*.

Transit serves two very different markets; "transit dependents" who can't drive or don't have cars and the "choice" market, consisting of people who can drive and have cars. Most RTD buses, which trundle along at 10 to 15 miles per hour and run only 1 to 4 times an hour, can't compete with the automobile and serve mainly transit dependents.

Anytime a transit agency can increase speeds and frequencies, whether bus or rail, it will attract more riders. The idea behind FasTracks is that faster, more frequent transit service can attract more people out of their cars and help reduce congestion. The problem is that most FasTracks lines are either not fast or not frequent enough to compete with autos.

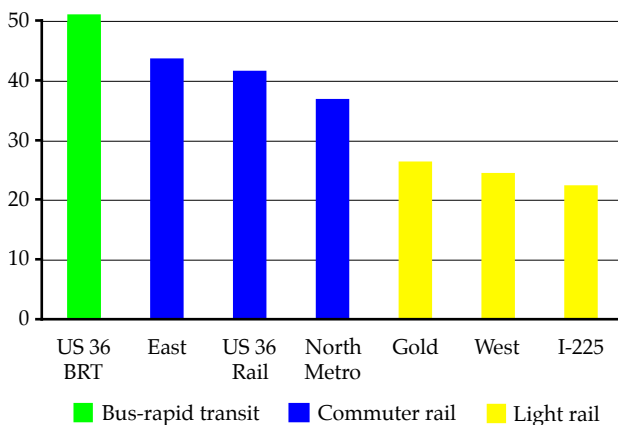
RTD's FasTracks plan includes three commuter-rail lines which would average a modest 41 miles per hour (figure 4.1). However, they would operate only every fifteen to thirty minutes (table 4.1), meaning typical riders will spend another five to ten minutes waiting at stations.

If average wait times are one-third of the time between trains, average speeds decline to just 34 to 36 miles per hour. This doesn't include, of course, the time getting between stations and the transit riders' actual origins and destinations, which can drop speeds even more.

FasTracks also includes three light-rail lines that would operate every four to fifteen minutes. However, they would average just 24 miles per hour, which is hardly competitive with autos. Adding average wait times of one-third of the time between trains reduces average speeds to 20 to 22 miles per hour.

The only FasTracks line which comes close to being competitive with autos is the one bus-rapid transit route, which would go 51 miles per hour and operate every two to four minutes all day long. Since intervals between buses are so short, adding average wait times drops average speeds by just 2 to 4 miles per hour to 47 to 49 miles per hour.

Figure 4.1: FasTracks Speeds in Miles Per Hour



Source: RTD, FasTracks Plan, p. 2-6.

Table 4.1

Frequencies of Trains or Buses Per Hour

Corridor	Type	Peak Hours	Off-Peak
US 36	Bus	30	15
SE	LR	15	10
SW	LR	10	8
West	LR	12	4
I-225	LR	8	6
Gold	LR	8	4
East	CR	4	4
North	CR	4	2
US 36	CR	4	2

Source: RTD, FasTracks Plan, figures 1-2 through 1-10.

RTD responds to claims that its trains will run

slowly by saying that at least they will run faster than autos in the same corridors in 2025. According to DRCOG's transportation model, that's true—but only because spending money on FasTracks rather than on projects that will truly reduce corridor congestion would allow congestion to increase dramatically.

In the I-225 corridor, for example, peak-hour auto traffic will move at 25.4 miles per hour in 2015, when FasTracks lines are completed. The FasTracks trains in the same corridor will go only 22.6 miles per hour. By 2025, however, congestion will have increased so much that peak-hour traffic will go only 20.5 miles per hour. I-225 traffic presumably moves proportionately faster today, probably around 31 miles per hour.

So construction of FasTracks slows 96 to 98 percent of all traffic down by 12 miles per hour. In exchange for this, some of the 2 to 4 percent of people who ride transit will get to go 24 to 40 miles per hour instead of the 51 miles per hour they could travel if RTD used bus-rapid transit instead of rails. This hardly seems like a fair trade off.

Table 4.2  
Peak-Hour Speeds in Miles Per Hour

Corridor	2004 Auto	2015 Auto	2025 Auto	Fas- Tracks
Central	22.7	18.8	14.9	8.6
East	38.1	34.1	30.1	43.8
Gold	21.0	17.0	13.0	26.6
I-225	30.3	25.4	20.5	22.6
North	23.6	17.0	11.4	37.0
Southeast	23.3	17.7	12.1	27.1
Southwest	19.3	14.4	9.5	30.8
U.S. 36 Rail	26.1	20.5	14.9	41.7
U.S. 36 Bus	25.8	20.4	15.0	50.7
West	26.4	21.7	17.1	24.8

Source: RTD, *FasTracks Plan*, p. 2-6. 2004 auto speeds extrapolated from 2015 and 2025. To avoid double counting, averages do not include the US 36 Bus route.

The slow speeds and infrequent service of FasTracks rail lines is one of the main reasons why (as chapter 2 of this paper discusses in detail) DRCOG estimates that FasTracks will take only 0.5 percent of weekday traffic off the road. Even if highways get more congested than they are

today, as DRCOG predicts, slow and infrequent trains simply cannot compete with the convenience of personal automobiles.

RTD's plans to run bus-rapid transit at higher speeds than any rail line affirms the conclusions of a 2001 U.S. General Accounting Office report that found bus-rapid transit was both faster and less expensive than rail.<sup>2</sup> As chapter three of this paper will show, RTD projects that its bus-rapid transit line will also cost less to build and less to operate than any of the rail lines.

Residents of the Denver metro area rode RTD an average of 24 times in 2001. DRCOG estimates that, without FasTracks, this average will be maintained through 2025, but with FasTracks, it will increase to 30.<sup>4</sup> Thus, FasTracks will give typical Denver-area residents just six new transit rides a year. But an even greater improvement could be achieved through bus-rapid transit's faster speeds and greater frequencies.

Given equal speeds and frequencies, there is no reason to expect rail to attract more riders than buses, and certainly not enough to justify rail's huge additional cost. As one recent study found, "there is no evident preference for rail travel over bus when quantifiable service characteristics such as travel time and cost are equal."<sup>3</sup> Since RTD's bus-rapid transit line will actually provide better service than the rail lines, it should attract even more riders than rail would attract in the same corridor. Other than the bus-rapid transit line, none of the FasTracks lines can truly be called "fast."

## References

1. RTD, *FasTracks Plan* (Denver, CO: RTD, 2004), p. 2-6.
2. U.S. General Accounting Office, *Bus-Rapid Transit Shows Promise* (Washington, DC: GAO, 2001), p. 1.
3. Moshe Ben-Akiva and Takayuki Morikawa, "Comparing ridership attraction of rail and bus," *Transport Policy Journal* 9(2).
4. DRCOG, *Review of the RTD FasTracks Plan* (Denver, CO: DRCOG, 2004), p. 23. DRCOG's weekday trips converted to annual trips by multiplying by 301. Population from DRCOG, *Metro Vision 2025 Regional Transportation Plan* (Denver, CO: DRCOG, 2003), p. 17 as modified by DRCOG, *Review of FasTracks*, p. 37.

## 5. FasTracks Will Not Be Built Under Budget

*RTD brags that it has built light rail under budget. In fact, it has a history of significantly underestimating costs in the major investment study, which is when officials decide whether or not to build rail transit.*

RTD likes to brag that it has built its light-rail lines on time and under budget. That is true if the final cost is compared with the last budget prepared before completion of the lines. But comparing the final costs with RTD's original projections reveals a very different picture.

The major investment study for the Southeast Corridor light-rail project, for example, concluded that a light-rail line would cost \$445 million. It actually ended up costing \$879 million, or 97 percent more. The study rejected the alternative of building forty miles of bus/high-occupancy vehicle (HOV) lanes because it estimated such lanes would cost \$756 million. Yet the Colorado Department of Transportation is building 70 miles of new lanes as part of the T-Rex project for \$710 million. The actual cost per lane mile was thus 46 percent less than RTD's estimates.

RTD has prepared major investment studies for five of the FasTracks rail corridors and the bus-rapid transit line. As shown in table 5.1, FasTracks plans call for spending an average of 59 percent more than the costs projected in the major investment studies.

This is significant because the major investment studies are the only step in the planning process that considers a variety of alternatives. "The systematic tendency to overestimate ridership and to underestimate capital and operating costs," says U.S. Department of Transportation researcher Don Pickrell, "introduces a distinct bias toward the selection of capital-intensive

transit improvements such as rail lines."<sup>1</sup>

Table 5.1  
Cost Projections Made by Major Investment Studies and FasTracks  
(millions of dollars)

Corridor	MIS	FasTracks	Difference
West	\$250.3	\$424.2	69%
East	315.9	554.2	75%
Gold	281.1	335.5	19%
I-225	305.2	321.1	5%
US 36 Rail	211.4	461.7	118%
US 36 Bus	65.0	170.6	162%
Total	\$1,428.9	\$2,267.3	59%

Source: RTD, FasTracks Plan, appendix.

Development of more realistic estimates only after the alternatives are discarded ignores the possibility that those alternatives could produce similar benefits at a much lower cost. For example, if planners and decision makers had known that the East rail line would end up costing \$554 million instead of \$316 million, they might have selected another alternative such as bus-rapid transit.

### References

1. Don Pickrell, *Urban Rail Transit Projects: Forecast Versus Actual Ridership and Costs* (Washington, DC: US Department of Transportation, Urban Mass Transportation Administration, 1989), p. xi.



## 6. FasTracks Will Pollute the Air

*Denver's air quality meets federal standards for all pollutants except ozone. FasTracks will reduce emissions of some pollutants by less than 1 percent, but it will increase emissions of nitrogen oxides—an ozone precursor—by 2.66 percent.*

In 1990 and 1991, Congress tied federal transportation funding to air quality, requiring that Denver and other urban areas design their transportation systems to reduce air pollution. Rail advocates use this to argue that Denver should spend more money on rail transit instead of new roads.

As already noted, air quality has dramatically improved in the last thirty years, and auto emission controls played a major role in this improvement. By contrast, transit has played almost no role in air quality improvements. Transit's share of passenger travel in the Denver metro area has fluctuated between 1.3 percent and 1.8 percent over the past two decades.<sup>1</sup> It was 1.8 percent in 1984 and it is 1.8 percent again in 2001. The 1994 low of 1.3 percent may be as much due to measurement error as actual fluctuations in transit's share of travel.

If FasTracks takes less than 0.5 percent of autos off the road, it is not going to have much of an effect on air quality. DRCOG estimates that FasTracks will result in 0.47 percent less carbon monoxide emissions, 0.72 percent particulate emissions, and 0.64 percent less volatile organic compound emissions.<sup>2</sup> These are fairly insignificant, especially since the Environmental Protection Agency says that Denver already meets federal air quality standards for all of these pollutants and total pollution in 2025 is expected to be far less than it is today.<sup>3</sup>

The most important pollution problem remaining in Denver is ozone, as Denver violates EPA's new ozone standard and is expected to do so over the next few years. Ozone is formed when nitrogen oxides react with other pollutants. So it is significant that DRCOG estimates that FasTracks will have the largest impact on nitrogen oxide emissions, changing them by 2.66 percent. Unfortunately for FasTracks, it will *increase*, not reduce, nitrogen oxides by 2.66 percent.

FasTrack's trains, says DRCOG, will generate far more nitrogen oxides than the autos they

take off the road. The light-rail trains alone will generate almost twice as much nitrogen oxide as all the autos taken off the road by FasTracks, and the commuter rail trains alone will generate four-and-one-half times as much nitrogen oxide as all the autos taken off the road.<sup>4</sup>

Other air-quality programs can more effectively reduce air pollution at a far lower cost. Cars pollute least when driving at steady speeds, so traffic improvements that steady the flow of traffic can significantly reduce air pollution.

For example, traffic signal synchronization can smooth traffic flows and produce huge pollution benefits. San Jose recently retimed traffic signals on 223 of its most heavily used intersections. The retiming reduced stops at red lights by 31 percent and travel times by 16 percent. Actual pollution emissions declined by 5 to 15 percent, depending on the pollutant, for a total of 53.5 fewer tons of annual emissions.<sup>5</sup>

At a cost of about \$500,000 spread over ten years, synchronization reduced air emissions at a cost of roughly \$1,000 per ton. By comparison, the cost of reducing emissions through FasTracks, spread over 30 years (which gives FasTracks an advantage) will be well over \$100,000 per ton.

### References

1. US DOT, *Highway Statistics*, table HM-72, various years; *National Transit Data Base*, "Service Supplied and Consumed," various years.
2. DRCOG, *Review of FasTracks*, p. 26. Percentages are based on DRCOG's projections of 2025 pollution emissions, Jeff May, personal communication, 3 May 2004.
3. EPA, "Air Quality in Denver," [www.epa.gov/region08/air/aqdata/trends/aqdenver/aqdenver.html](http://www.epa.gov/region08/air/aqdata/trends/aqdenver/aqdenver.html).
4. DRCOG, *Review of FasTracks*, p. 26.
5. Gary Richards, "City Tweaks 223 Intersections to Ease Delays," *San Jose Mercury News*, November 6, 2003.

## 6. FasTracks Won't Help Low-Income People

*Low-income people need mobility to reach jobs, and the auto gives them access to far more jobs than transit. Yet FasTracks does nothing to increase auto access to jobs while it puts RTD at significant risk of having to cut back bus service to meet its bond obligations.*

The argument that taxpayers should spend billions of dollars to give people who own autos another transportation choice ignores the fact that tens of thousands of Denver families cannot afford to own an automobile. The 2000 census found that nearly 57,000 Denver-area households did not own an auto, and many of these households have low incomes.

Hispanics make up less than 14 percent of Denver households, but account for more than 22 percent of auto-less households. Black households make up less than 6 percent of Denver households, but account for 13 percent of auto-less households. Improving the mobility of low-income people is much more important than meeting the desire of wealthy people to have a rail choice added to their current choices of autos and buses.

The state of Ohio requires local governments to do an environmental justice analysis for major projects. The Cincinnati version of DRCOG, known as the Ohio-Kentucky-Indiana Council of Governments (OKI), did such an analysis for a light-rail proposal in that region. As shown in table 6.1, the study found that light rail would not significantly affect the percentage of jobs accessible to white, middle-class neighborhoods. But it would significantly reduce the percentage of jobs accessible to minority and low-income neighborhoods.

Table 6.1

Job Accessibility Before (1995) and After (2020) Proposed Light-Rail Construction	Percentage of Jobs within			
	20 Minutes		40 Minutes	
	by Auto		by Transit	
Neighborhoods	1995	2020	1995	2020
Minorities	82	53	20	16
Low-income	99	83	21	18
Other	100	100	42	41

Source: Ohio-Kentucky-Indiana Regional Council of Governments, OKI 2030 Regional Transportation Plan (Cincinnati, OH: OKI, 2001), p. 16-10.

Why is this? The short answer is that rail transit is so expensive that it forces transit agencies to neglect bus service and forces regions to neglect needed highway improvements.

Rail transit to white, middle-class neighborhoods has led to significant declines in bus service to low-income, minority neighborhoods in several cities, most notably in Los Angeles. There, black and Hispanic neighborhoods formed a bus-riders union to challenge deteriorating bus service. NAACP Legal Defense represented the union in a discrimination lawsuit against the Los Angeles transit agency. The suit resulted in a consent decree requiring the transit agency to buy new buses and restore bus service, which in turn led the agency to abandon many of its proposed rail lines.<sup>1</sup>

One of the big problems with paying for a rail system with a sales tax, as RTD proposes, is that it leaves the transit system vulnerable to economic downturns. The high cost of rails is paid for by the sale of bonds that are then repaid, with interest, out of sales taxes. When sales taxes decline in a recession, the agency must still meet its bond payments, so it is forced to dramatically reduce transit service. Usually, the agency is reluctant to reduce rail service, so most of the reductions fall on bus riders.

This has happened in San Jose, which has built several light-rail lines financed out of sales taxes. San Jose transit ridership peaked in 2001. But the recent recession caused a severe financial crisis due to a decline in sales tax revenues. This forced the agency to cut back both bus and rail service. Even though the biggest cuts were to bus service, rail ridership has declined by 44 percent while bus ridership has declined by only 28 percent in the past three years.<sup>2</sup> Most recently, the agency increased fares by as much as 50 percent and says it may need to ask voters for another 0.5 percent sales tax increase.<sup>3</sup>

Other cities that have had to reduce bus service or raise bus fares to help pay for rail include

Portland, Sacramento, and Washington, DC, among others.

Recognizing this, numerous black community leaders have opposed rail transit proposals in their cities. In Houston, 40 black ministers opposed that city's plan for light-rail transit. "They will run out of money and then cut bus service," said Reverend J. J. Roberson, "which will leave many in our community without transportation."<sup>4</sup> Kansas City Councilwoman Saundra McFadden-Weaver, who is also a pastor in her church, opposed light rail in that city, saying "light rail is ice cream and cake. We need to make sure people have meat and potatoes before spending money on ice cream and cake."<sup>5</sup>

Several studies have found that giving low-income people transit passes will not help them get out of poverty as well as making sure they have access to automobiles. One University of Southern California study on transit and low-income households concluded that, "in most circumstances, private vehicle access is the key to improved mobility for the poor as well as the non-poor."<sup>6</sup>

This was affirmed by a University of California study that found that closing the black-white auto ownership gap would reduce the black-white employment gap by 45 percent. "The relative car-employment effect for blacks is largest in metropolitan areas where the relative isolation of blacks from employment opportunities is the most severe," said the study.<sup>7</sup>

To solve transportation problems, a Wisconsin community action agency helped low-income people purchase automobiles. "There is no real-life bus that fits Becky's needs," said the agency, referring to a former welfare recipient. "There will be no such bus in the future."<sup>8</sup>

Several of RTD's proposed rail lines are expected to cost \$500 to \$750 million each. The cost of one of these lines could buy every auto-less family in the Denver metropolitan area a brand-new car. If air pollution is a worry, for less

than the cost of two of these lines, we could buy every auto-less family an ultra-low emissions hybrid-electric car.

While giving cars to low-income people is not necessarily the best policy, giving low-income people greater mobility should be a higher social goal than giving wealthy people who already have lots of mobility one more "choice." Yet rail advocates react in horror to the idea of low-income people acquiring cars, as if it is more important to keep people transit-dependent than it is to risk adding a little more congestion to Denver's highways. The solution to poverty is not to keep low-income people immobilized any more than the solution to congestion is more congestion.

## References

1. Bus Riders Union, [www.busridersunion.org](http://www.busridersunion.org).
2. Gary Richards, "Ridership hits the skids for valley buses, trolleys," *San Jose Mercury News*, December 7, 2003, [www.bayarea.com/mld/mercurynews/news/transportation/7435530.htm](http://www.bayarea.com/mld/mercurynews/news/transportation/7435530.htm).
3. Gary Richards, "VTA considering transit tax plan," *San Jose Mercury News*, June 5, 2004.
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5. Saundra McFadden-Weaver, "Why I Opposed Light-Rail Transit in Kansas City," presentation at the Preserving the American Dream conference, Portland, Oregon, April 17, 2004.
6. Genevieve Giuliano, Hsi-Hwa Hu, and Kyoung Lee, *The Role of Public Transit in the Mobility of Low-Income Households* (Los Angeles, CA: USC, 2001), p. ii.
7. Steven Raphael and Michael Stoll, "Can Boosting Minority Car-Ownership Rates Narrow Inter-Racial Employment Gaps?" (Berkeley, CA: Berkeley Program on Housing and Urban Policy, 2000), p. 2.
8. Lisa Brabo, Peter Kilde, Patrick Pesek-Herriges, Thomas Quinn, and Inger Sanderud-Nordquist, "Driving out of Poverty in Private Automobiles," West Central Wisconsin Community Action Agency, 2002, [www.nedlc.org/center/Jump\\_start.pdf](http://www.nedlc.org/center/Jump_start.pdf).

## 8. FasTracks Won't Offer Worthwhile "Choices"

*Rail advocates say trains give people more choices, but not all choices are worthwhile. Bus-rapid transit is faster, operates more frequently, and costs less than rail transit. There is no evidence that rail transit will attract any more riders; it will just cost more.*

Confronted with rail's failure to do anything about congestion, rail advocates respond by saying that the purpose of FasTracks is not to reduce congestion but to give people more transportation choices. While there is nothing wrong with more choices if people are willing to pay the cost of their choices, it is difficult to see why society needs to heavily subsidize some choices while others pay their full, or nearly full, cost.

The basic choice argument is that people who own automobiles will ride a train but they will not ride a bus. It could also be argued that people who will not ride a bus will ride a stretch limousine. As noted in chapter 2, stretch limousines could actually cost less per passenger than FasTracks, but anyone who urged multi-billion-dollar subsidies to stretch limousines would be laughed out of Colorado.

In fact, research has found that rail attracts more riders than buses only because transit agencies offer rail service that is faster and more frequent than bus service. One recent survey found that "there is no evident preference for rail travel over bus when quantifiable service characteristics such as travel time and cost are equal, but a bias does arise when rail travel offers a higher quality service."<sup>1</sup> Similar conclusions were reached by Nobel Prize-winning economist Daniel McFadden, who found that buses could attract as many riders as San Francisco's BART rail system provided they offered equal frequencies and speeds.<sup>2</sup>

The General Accounting Office review of bus-rapid transit found that it had several advantages over rail transit:

- As previously noted, bus-rapid transit could be faster than rail transit because it used smaller vehicles that could provide express

service to more communities rather than larger rail vehicles that made intermediate stops;

- While rail lines take years to build, bus-rapid transit service could start almost immediately, with perhaps a six-month period to order buses;
- The capital cost of bus-rapid transit is as little as 2 percent of the cost of light rail. Even if exclusive bus lanes were built for bus-rapid transit (which is unnecessary), the cost could be less than half that of light rail.
- Bus-rapid transit also costs less to operate than rail transit: The GAO found bus operating costs per vehicle mile were 20 to 50 percent of rail costs. While rail vehicles can carry more people than buses, on the average rail transit cars carry far fewer people than can be accommodated by a bus. RTD's light-rail cars, for example, carry an average of just 15 people over the course of a day.

Buses also have a significant flexibility advantage over rails. This means buses can be more responsive to changing travel patterns and demands. If RTD had decided to use bus-rapid transit in its Southwest Corridor, for example, it wouldn't need to spend tens of millions of dollars today to rebuild stations to allow four-car trains.

### References

1. Moshe Ben-Akiva and Takayuki Morikawa, "Comparing ridership attraction of rail and bus," *Transport Policy Journal* 9(2).
2. Daniel McFadden and Antti P. Talvitie, *Demand Model Estimation and Validation* (Berkeley, CA: Institute of Transportation Studies, 1977).

## 9. FasTracks Will Harm Neighborhoods

*Rail transit does not create new growth, but it may redistribute growth from one place to another—mainly to downtown. As such, it is largely a subsidy to downtown. Any additional economic development will require even more subsidies.*

Some people who understand FasTracks' high cost and its negligible effects on congestion nevertheless support the plan because they hope it will lead to economic development in the various corridors. By "economic development," they often mean high-density and mixed-use transit-oriented developments.

DRCOG's *Metro Vision* plan includes an urban-growth boundary around the region. To minimize expansion of the boundary, DRCOG wants "compact, mixed-use activity areas" that will "absorb a significant amount of the population and employment growth that is anticipated to occur within the region through 2030." DRCOG believes that rail transit "encourages higher density development."<sup>1</sup>

RTD's FasTracks plan calls for redeveloping existing neighborhoods near the 39 FasTracks stations that are in developed areas into high-density, mixed-use developments. Another 16 stations are in undeveloped areas, and DRCOG and RTD want to see these areas developed as high-density areas similar to Stapleton.

Transit-oriented developments are the latest planning fad. Like earlier planning fads, such as urban renewal and public housing, transit-oriented developments are proving extremely costly and destructive to the areas in which they are located. Rather than promote transit ridership, they increase traffic congestion by concentrating more driving in smaller areas. While there is certainly a market for transit-oriented developments, that market is quickly saturated, and further developments often require huge subsidies to get people to live in them.

One of the major advocates of such transit-oriented developments is Robert Cervero, a planning professor at the University of California at Berkeley. Yet, when the Federal Transit Administration asked Cervero to review the research on transit and urban development, Cervero concluded that "Urban rail transit investments rarely "create" new growth, but more typically

redistribute growth that would have taken place without the investment." In particular, Cervero found that "the greatest land-use changes have occurred downtown."<sup>2</sup>

As a map of FasTracks shows, all but one of the FasTracks lines goes to downtown Denver. FasTracks is thus most likely to stimulate downtown property values at the expense of property values in the region. FasTracks may also increase property values in other communities it serves at the expense of other property values in the region, but this is less likely.

Cervero's own research on San Francisco's BART rail system, for example, found that BART's effects on development have been "fairly modest" and confined mainly to downtown San Francisco and two or three suburbs. "BART has not triggered hoped-for levels of reinvestment in downtown Berkeley, Oakland, or Richland." In fact, "population has grown faster away from BART than near it."<sup>3</sup>

While Cervero credits BART with redevelopment of Walnut Creek, in fact Walnut Creek is located at the intersection of a radial freeway (state route 24) and a ring freeway (I-680). As Joel Garreau observes, "Edge cities are most frequently located where beltway-like bypasses around an old downtown are crossed at right angles by freeways that lead out from the old center."<sup>4</sup> If cities such as Golden, Arvada, Longmont, and Aurora expect that FasTracks will automatically lead to huge private investments in their areas, evidence from other cities suggests they are likely to be disappointed.

The experience of Portland, Oregon, which is often showcased as a model for rail transit and transit-oriented developments, is a good example. When Portland's first light-rail line was completed in 1986, planners rezoned all the station areas along the line for high-density, mixed-use developments. A decade later, in 1996, planners ruefully admitted that not one development had been built along the line.<sup>5</sup> When asked why,

developers reported that the market for multi-family housing was saturated by the existing supply.

Undaunted, Portland decided to offer tens of millions of dollars in subsidies to developers of transit-oriented developments, including:

- A ten-year waiver of all property taxes;
- Waivers of system-development charges;
- Sales of public land to private developers at below-market prices;
- Purchases of private land for resale to developers at, typically, half the purchase price;
- Direct grants to developers;
- Construction of various forms of infrastructure at no cost to developers.

In an effort to promote mid-rise (four- to five-story) construction, Portland also relaxed building codes to allow for wood construction rather than steel and concrete. This will make these buildings potential fire hazards in a few years.

The result has been the construction of dozens of such developments. Examples include:

- Steele Park has single-family homes with room for one car per home, but most families in the neighborhood own two to four cars each. As a result, residents park on sidewalks and in fire lanes, creating impediments for delivery of emergency services.<sup>6</sup>
- Cascade Commons is a \$31.5 million transit-oriented development that received \$13 million in subsidies and has 0.6 parking spaces per housing unit. Residents park on the sidewalks, in fire lanes, and in adjacent neighborhoods.<sup>7</sup>
- Beaverton Creek is a four-story development with apartments on the top three floors and retail space on the bottom floor. Located next to a light-rail stop and a large park-and-ride station, the development has only a handful of parking spaces open to customers of the retail shops. As a result, only three of the dozen or more retail spaces have ever been occupied, and two of those have since gone out of business or moved.<sup>8</sup>
- Beaverton Round was conceived as a major mixed-use development surrounding a light-rail station with limited parking. After receiving \$9 million in subsidies, the initial developer went bankrupt because no financier would put up funds to finish a devel-

opment with minimal parking.<sup>9</sup> The unfinished buildings sat idle for more than two years before another developer finished part of the project on the condition that the rest could be dedicated to parking. Parking was crucial, said the developer, because “there are not enough people on light rail to energize retail.”<sup>10</sup>

- Orenco is a large greenfield development built next to a light-rail station that is often featured in national publications lauding Portland’s planning. Yet three out of four residents consider themselves “car-only commuters”<sup>11</sup> and 82 percent drive to work on a typical day.<sup>12</sup>
- Cascade Station is located near the Portland Airport and has been zoned for high-density, mixed-use development. No development has taken place here or near several other light-rail stations because zoning restrictions mandating mixed uses and limiting parking make the developments unmarketable.
- New retail developments along Portland’s newest light-rail line all include large parking areas, much to the annoyance of planners who believe retailers should orient developments around the 2.1 percent of Portlanders who ride transit rather than the 95 percent who drive or ride automobiles.<sup>13</sup>

Portland’s experience shows that so-called transit-oriented development only works when it is actually auto-oriented development. However, such developments add to congestion by concentrating traffic in smaller areas. Nor are they highly desired for housing, having some of the highest vacancy rates in the region.<sup>14</sup>

Advocates of transit-oriented developments cite studies showing that people who live in high-density, mixed-use areas tend to drive less than people who live in more auto-oriented suburbs. But these studies suffer from a problem of self selection: People who want to drive less tend to live in pedestrian- or transit-friendly areas while people who want to drive more live in auto-friendly areas. That doesn’t mean that increasing the percentage of people who live in higher densities will lead to significantly less driving.

There is certainly a market demand for this sort of development, mainly consisting of young people who have no children. But that demand is



quickly saturated by the available supply. Once the demand is met, further developments can take place only if they are subsidized.

In sum:

- Rail transit does not by itself attract private investment.
- If the market for multi-family housing is already saturated, dense developments will require heavy subsidies.
- So-called transit-oriented developments will fail unless they include plenty of parking.
- Transit-oriented developments may give people who do not want to drive access to transit, but do not significantly alter the travel habits of people who prefer to drive.

### References

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7. John Charles, *The Mythical World of Transit-Oriented Development* ((Portland, OR: Cascade Policy Institute, 2001), [www.cascadepolicy.org/..pdf/env/P\\_1019.htm](http://www.cascadepolicy.org/..pdf/env/P_1019.htm)).
8. John Charles, interview, April 16, 2004.
9. Alex Pulaski, "Developers and Beaverton officials fight for control of a dream project turned money pit," *The Oregonian*, December 24, 2000.
10. Richard Colby, "Moving in next to MAX," *The Oregonian*, November 7, 2002.
11. Bruce Podobnik, Ph.D., *Portland Neighborhood Survey, Report on Findings from Zone 2: Orenco Station*, Lewis & Clark College, Portland, Oregon, January 20, 2002.
12. Michael Lapham, *Transit Oriented Development: Trip Generation and Mode Split in the Portland Metropolitan Region*, Portland State University, March 2001.
13. Randy Gragg, "Rail paradise, or put up a parking lot?" *The Oregonian*, May 9, 2004.
14. Gordon Oliver, "Apartment hunters move in on deals," *The Oregonian*, December 6, 1999.

## 10. The Alternative to FasTracks

*Buses work better and cost less than trains and are the obvious transit alternative to FasTracks. To actually reduce congestion, buses must be supplemented with a network of high-occupancy/toll (HOT) lanes throughout the Denver metropolitan area.*

RTD data clearly shows that bus-rapid transit is far superior to rail transit. At a much lower cost, RTD can run bus-rapid transit lines that go faster and more frequently than rail transit.

If bus-rapid transit is so much better than rail transit, why does RTD propose rail transit in six of the seven FasTracks corridors? One answer may be that early planning documents greatly underestimated the cost of rail transit and may have overestimated the cost of bus lanes, as chapter 4 showed was the case for the Southeast Light-Rail major investment study.

One objection to bus-rapid transit is that buses aren't very rapid if they are stuck in traffic. The solution is to build high-occupancy/toll (HOT) lanes whose cost can be largely covered by the tolls collected from low-occupancy vehicles. Such HOT lanes have proven very successful in California, New Jersey, and elsewhere.

Electronic tolling allows toll collection without the inconvenience of tollbooths. Dynamic tolling—that is, tolls that vary by the amount of congestion—can guarantee that HOT lanes remain uncongested during all hours of the day. This means anyone can get between any two points in the metropolitan area at 5 PM in the same amount of time as it would take them to drive that distance at 5 AM.

HOT lanes provide more than a place for buses



*HOT lanes in California pay for themselves and relieve congestion for people who don't use them by taking as many as 30 percent of the cars off the free lanes.*

to go. They allow people to travel in uncongested traffic at any time of the day. By taking traffic off of the free lanes they save people in those lanes time as well. And toll revenues can be matched to federal funds to build a region-wide HOT-lane network.<sup>1</sup>

Instead of building expensive rail lines that will cost hundreds of millions of dollars and take years before they open, RTD should purchase comfortable intercity-type buses and immediately begin bus-rapid transit service. Some of the \$932 million in federal funds that RTD wants to spend on FasTracks could be used to buy those buses.

The remainder of the federal funds could be seed money to start building a HOT-lane network. The Colorado legislature should authorize the Department of Transportation to convert existing HOV lanes to HOT lanes. The funds from those lanes, along with federal funds, should be dedicated to building more HOT lanes. The state owns sufficient right-of-way to build such lanes along most of the freeways in the region.

This solution will significantly reduce air pollution as well. Cars pollute most when they are in stop-and-go traffic and they pollute least when they are moving at steady speeds of 35 to 55 miles per hour, depending on the pollutant. Relieving congestion is an important pollution-reducing tool that is not accurately reflected in transportation-air pollution models.

In short, HOT lanes will do far more to reduce traffic congestion and bus-rapid transit will provide far better transit service than FasTracks. Taxpayers Against Congestion will soon publish a detailed proposal for financing and building these HOT lanes and bus-rapid transit routes.

### References

1. Robert Poole, Jr., and C. Kenneth Orski, *HOT Lane Networks: A New Plan for Congestion Relief and Better Transit* (Los Angeles, CA: Reason Foundation, 2003), 43 pp.

## Data Sources for the FasTracks Index

Most of the data in this report and the FasTracks Index (p. 24) come from RTD's *FasTracks Plan*, which includes four volumes of appendices; RTD's *FasTracks Financial Plan*; DRCOG's *Review of the RTD FasTracks Plan*; and DRCOG's *Metro Vision 2025 Regional Transportation Plan*. Sources of FasTracks Index numbers are listed below.

The *FasTracks Plan* (though not chapter 2 or the appendices) can be downloaded from [rtd-denver.com/fastracks/FasTracks\\_Plan.pdf](http://rtd-denver.com/fastracks/FasTracks_Plan.pdf). The *Financial Plan* can be downloaded from [rtd-denver.com/fastracks/Financial\\_Plan.pdf](http://rtd-denver.com/fastracks/Financial_Plan.pdf). DRCOG's *Review of FasTracks* can be downloaded from [www.drcog.org/downloads/Agenda\\_Support\\_PDFs/SB208\\_Report\\_Final\\_4-21-04.pdf](http://www.drcog.org/downloads/Agenda_Support_PDFs/SB208_Report_Final_4-21-04.pdf). *Metro Vision 2025* can be downloaded from [www.drcog.org/downloads/2025\\_Interim\\_Regional\\_Transportation\\_Plan\\_4-17-02.pdf](http://www.drcog.org/downloads/2025_Interim_Regional_Transportation_Plan_4-17-02.pdf).

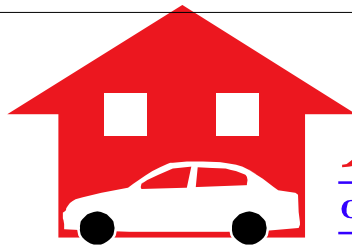
1. *FasTracks Financial Plan*, p. 1.
2. *Review of FasTracks*, table 14, p. 32; *FasTracks Financial Plan*, p. 15.
3. *FasTracks Plan*, appendix C.
4. Sum of items 1, 2, and 3.
5. *Review of FasTracks*, table 15, p. 42.
6. Assumes bus-rapid transit operating cost per rider is 58 to 87 cents less than rail as estimated by the *FasTracks Plan*, appendix E.
7. Sales tax revenues in *FasTracks Financial Plan*, pp. 4–5, divided by population from *Review of FasTracks*, p. 37.
8. Item 7 multiplied by four.
9. Item 4 (total cost) divided by projected 2015 population (which is the average of 2005 through 2025 populations) of 3.06 million.
10. Item 9 multiplied by four.
11. 2001 transit trips from *Metro Vision 2025*, table 6, p. 97; population from table 2, p. 17.
12. *Review of FasTracks*, p. 23; daily transit trips are multiplied by 301 to get annual transit trips and divided by projected 2025 population.
13. Same as item 12.
14. Item 13 minus item 12.
15. See item 7.
16. Item 15 divided by item 14.
17. *Review of FasTracks*, p. 23.
18. Same as item 17.
19. 2001 vehicle-miles traveled from *Metro Vision 2025*, table 6, p. 97; 2025 from *Review of FasTracks*, p. 23.
20. Same as item 19.
21. Item 19 minus item 20 divided by item 19.
22. *Review of FasTracks*, p. 24.
23. *Review of FasTracks*, table 9, p. 26. According to Jeff May of DRCOG, total 2025 carbon monoxide pollution without FasTracks will be 1140.89 tons.
24. Same as 23; 2025 particulate pollution will be 50.2 tons.
25. Same as 23; 2025 volatile organic compound pollution will be 37.4 tons.
26. Same as 23; 2025 nitrogen oxide pollution will be 32.0 tons.

### Rail vs. Bus-Rapid Transit

Average speeds: *FasTracks Plan*, chapter 2, p. 2-6.

Frequencies: *FasTracks Plan*, figures 1-2 through 1-10.

Capital and operating costs: *FasTracks Plan*, appendix E.



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## The FasTracks Index

### Cost of FasTracks

1. FasTracks construction cost:	\$4.7 billion
2. FasTracks finance charges (depending on interest rates):	\$3.4–\$6.3 billion
3. Costs of RTD’s post-2025 “Future Vision” plans:	\$871 million
4. Total construction and finance costs (depending on interest rates):	\$9.0–\$11.9 billion
5. Annual operating cost of FasTracks:	\$140 million
6. Estimated annual operating cost if bus-rapid transit used instead of rail:	\$110 million
7. Average cost of sales tax increase per person, 2005–2025:	\$2,000
8. Average cost of sales tax increase per family of four, 2005–2025:	\$8,000
9. Total cost of FasTracks per person (including interest and post-2025 costs):	\$3,000
10. Total cost of FasTracks per family of four (including interest and post-2025 costs):	\$12,000

### FasTracks and Transit Ridership

11. Number of times per year average resident rode transit in 2001:	23
Number of times per year average resident will ride transit in 2025	
12. if FasTracks is not built:	24
13. if FasTracks is built:	30
14. Net additional rides per person per year if FasTracks is built:	6
15. Sales tax average resident will pay in 2025 if FasTracks approved:	\$144
16. Average sales tax for each additional ride in 2025 if FasTracks is built:	\$24
17. Daily transit rides in 2025 if FasTracks is not built:	285,000
18. Daily transit rides in 2025 if FasTracks is built:	357,000

### FasTracks and Congestion

19. Growth in auto traffic by 2025 if FasTracks is not built:	163.3%
20. Growth in auto traffic by 2025 if FasTracks is built:	162.5%
21. Share of auto traffic that will be taken off the road by FasTracks:	0.5%
22. Share of rush-hour traffic that will be taken off the road by FasTracks:	1.4%

### FasTracks and Air Pollution

23. Reduction in carbon monoxide due to FasTracks	–0.47%
24. Reduction in particulates due to FasTracks	–0.72%
25. Reduction in volatile organic compounds due to FasTracks	–0.64%
26. Increase in nitrogen oxides due to FasTracks	2.66%

### Rail vs. Bus-Rapid Transit

	Average Speed miles/hour	Peak-Hour Frequencies trips/hour	Off-Peak Frequencies trips/hour	Capital Cost/Rider Dollars	Operating Cost/Rider Dollars
Bus-rapid transit	51	30	15	3.60	1.11
Light-rail transit	24	8 to 15	4 to 10	4.86 to 5.69	1.68 to 1.97
Commuter rail	41	4	2	6.57 to 7.69	1.69 to 1.98

*Even though RTD plans to run the one proposed bus-rapid transit line at higher speeds and greater frequencies than any rail line, RTD says it will cost less to start and less to operate than any of the rail lines. See page 23 for references.*