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REVIEW OF KANSAS CITY TRANSIT PLANS

By Randal O'Toole

EXECUTIVE SUMMARY

After rejecting rail transit proposals at the polls six different times, Kansas City voters approved a light-rail plan in November, 2006. This plan, however, has proven infeasible, with costs at least 50 percent greater than its promoters projected. Implementing the plan would require cutting bus service by as much as 40 percent. While the City Council formally repealed the plan in November, 2007, many people in Kansas City still believe that some form of light rail or streetcars would be worthwhile.

A close look at other urban areas that have built light-rail transit during the past three decades offers many lessons for Kansas City transportation policymakers.

- Light rail is not only expensive — typically costing as much to build as a four-lane freeway (and a mile of streetcar line typically costs as much as two freeway lane miles) — it suffers cost overruns averaging more than 40 percent.
- The average mile of light-rail line carries only about 30 percent as many riders as a single mile of freeway lane — and streetcars about 10 percent as many. This makes light rail and streetcars more than 10 times as expensive for moving people than freeways.
- Rail transit also costs considerably more to operate than buses on comparable routes.
- Rail transit takes years to plan and build, and there is no guarantee that people will still want to go where the rails lead when they finally open. This gives transit agencies a tremendous incentive to become social engineers, trying to bribe or coerce people to live near rail stations.
- Only three of the 13 formerly non-rail regions that have built new light-rail lines during the past 30 years have experienced an increase in per-capita transit ridership.
- In most regions that have built light rail, public transit's share of passenger travel and commuting actually declined. In the few regions where that share increased, the gains were so small — less than a quarter of 1 percent — as to have an imperceptible effect on congestion.

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- When they operate in streets, light rail and streetcars actually add to congestion and disrupt coordinated traffic signals.
- Rail transit has been especially unsuccessful in regions like Kansas City, where only a small percentage of jobs is located downtown.
- Light rail is dangerous, killing three times as many people in accidents as buses, for every passenger mile carried. Light rail is also the scene of far more robberies, assaults, rapes, and other crimes than any other form of urban transit.
- Most light-rail lines consume more energy and emit more greenhouse gases, per passenger mile, than the average passenger car. All of them consume more energy per passenger mile than a Toyota Prius, or other hybrid-electric cars.
- Neither light rail nor streetcars stimulate urban redevelopment. Often, however, they do stimulate subsidies to urban redevelopment, which are simply one more type of burden to taxpayers.

This information suggests that light rail and streetcars would not be a good fit for Kansas City. Instead, this study recommends that the Kansas City Area Transportation Authority contract out bus operations to private companies, which is likely to save 30 to 40 percent of costs. This, in turn, will allow a 50- to 60-percent increase in bus services, including several new bus–rapid transit routes. These improvements should result in far more new riders using public transit than would be gained from light rail — without increasing the cost to taxpayers.

INTRODUCTION

Light rail has become the must-have transportation accessory of choice for the most fashionable American urban areas in the 21st century. Since 1980, transit agencies in nearly two dozen urban areas have built or are building light-rail lines, or have upgraded older streetcar lines to light-rail standards.

The term “light rail” was coined in 1972 to describe a form of rail transit that sometimes operates in streets and sometimes on its own exclusive rights of way.[1] This distinguishes it from heavy rail, a term applied to subways and elevated trains that always operate in their own exclusive rights of way. Lately, the term streetcars has been revived to refer to smaller railcars that almost always operate in streets.

Despite its popularity as “modern” transit, light-rail technology is not new. Basic streetcar technology was developed in the 1880s, and those aspects that distinguish light rail from streetcars were perfected in the 1930s. The cars crossing the San Francisco–Oakland Bay Bridge from 1939 through 1958 had virtually all of the features found on today’s light-rail trains, including articulated cars that could run in multiple units, automated control systems to prevent collisions, and relatively high-speed operations when on an exclusive right of way.

Kansas City has, until recently, resisted the siren song of streetcars and light rail. Between 1997 and 2003, Kansas Citians had six opportunities to vote on light rail, and in almost every case voters rejected rail by 60 percent or more.[2] When the issue was put back on the ballot in

2006, city leaders who had traditionally opposed it assumed it would fail again and did not campaign strongly against it. As a result, the new measure — which called for a 27-mile light-rail line and an aerial tramway — passed by 53 percent.

Since the election, several flaws have been identified in the measure, including:

- The Kansas City Area Transportation Authority (KCATA) estimates that the costs of the proposed line will be at least 50 percent more than projected by proponents;
- The measure presumed local funding would be matched by federal funds, but the Federal Transit Administration says that it would reject such funding because the measure diverts funds from buses to rail;
- The proposed alignment goes through a city park, which would require another vote.

Because of these and other problems, the City Council repealed the ballot measure on November 8, an action it is legally allowed to take a year after a measure is passed.[3] But many in the city presume that some form of "starter" light-rail system will still be built. The *Kansas City Star*, for example, has proposed a 9.75-mile streetcar line financed with a quarter-cent sales tax and gasoline taxes.[4] A citizen task force appointed by the mayor, the City Council, and the Kansas City Area Transportation Authority has proposed a 12- to 14-mile "fast streetcar" route, to be financed by a three-eighth-cent sales tax.[5]

All of these proposals assume that the benefits of light rail or streetcars are greater than the costs, and would justify the hundreds of millions of dollars that taxpayers would need to invest in the projects. Before the city decides to spend large amounts of money on any sort of rail project, however, it should ask:

- Is rail a cost-effective way of moving people?
- Is rail a cost-effective way of solving congestion, pollution, or other problems?
- Does rail revitalize cities or promote a superior urban form?

These reasons have all been offered as justifications for building light rail in Kansas City and elsewhere. Kansas City can look at the experiences of other cities to see whether any of them are valid.

It is worth noting that the author of this study is a genuine "rail nut." My first job was at a streetcar museum in Oregon. I've helped restore the nation's second-most-powerful operating steam locomotive. I have owned five rail passenger cars and traveled hundreds of thousands of miles on Amtrak and other passenger rail lines. If rail transit worked, I would be an enthusiastic supporter. But I am also an economist, and before I put my own personal preferences before those of the taxpayers who must fund rail projects, I have to ask whether rail transit works well enough to justify its costs.

This paper will first examine some of the general characteristics of light rail and streetcars. It will then review the experiences of other cities that have built rail transit. Finally, it will apply this experience to the Kansas City proposals.

LIGHT RAIL AND STREETCARS

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urban areas. Light rail and streetcars, it is claimed, will reduce traffic congestion, get people out of their automobiles, increase transit ridership, improve health and reduce obesity, increase people's sense of community, and promote neighborhood revitalization and a denser urban form that is more environmentally friendly.

In fact, there is almost no evidence that any of these statements are true. Before examining such claims in detail, it is useful to look at some of the general characteristics of light rail and its streetcar cousin.

Although light rail is often described as high-capacity transit, it is more accurately called moderate-capacity transit. A typical light-rail car has about 70 seats. Although it theoretically has a "crush capacity" of 100 more standees, as a practical matter, the car will appear to be full enough to deter new riders with only 50 standees.[6] Since the cars are nearly 100 feet long, they cannot operate in trains of more than three cars without blocking traffic in areas where blocks are about 300 feet long. The practical capacity of a light-rail train in Kansas City, then, is about 375 people.

That is far more than buses, the largest of which have about 75 seats and room for about 20 to 30 standees. However, for safety reasons, light-rail trains can only operate about once every three minutes, while several buses can operate past a point every minute. If we assume just three buses per minute, a bus or HOV lane can move more than twice as many people per hour as a light-rail line. Being more flexible, buses can diverge when they leave heavily used corridors to serve many neighborhoods, while light-rail cars tend to run nearly empty over much of their fixed routes.

Streetcars have the disadvantages of light rail's fixed routes without the advantages of light rail's larger vehicles. Streetcars in Portland have 40 seats and room for no more than 20 standees, about the same as a standard bus.

The oft-heard claim that rail transit can carry as many people as an eight-lane freeway refers to subways or elevateds that run in eight-car trains as often as once every minute. No light-rail system can come close to these numbers.

Rail proponents also like to boast that light-rail cars can go 60 miles per hour. This should not be particularly impressive considering that buses and automobiles can easily exceed such speeds. But the truth is even less impressive: Counting stops to allow passengers to get on and off, the typical light-rail system averages little better than 20 miles per hour. Because streetcars stop more frequently, they are even slower. Portland's streetcar averages about 7 miles per hour.

Even without counting the cost of constructing the rail lines, light-rail cars are much more expensive than buses. A 70-seat light-rail vehicle typically costs at least $3 million, or 10 times as much as a 40-seat bus. While the rail cars are projected to have somewhat longer life spans, the cost per seat-hour is still much higher. Streetcars also cost far more than buses: Imported from the Czech Republic, Portland's streetcars cost nearly $2 million apiece, or more than six times as much as a bus with a similar capacity.[7]

Two other costs are worth noting. First, light rail has the worst safety record in the transit industry. Between 1996 and

2005, light rail caused about 13 fatalities for every billion passenger miles that it carried. This is nearly three times worse than buses or heavy rail; only commuter rail, at 10 per billion, approaches the fatality rate of light rail.[8] The reason for light rail's deadly record is clear: Light-rail cars weigh far more than buses or automobiles, making them both more difficult to stop and more dangerous when they hit a pedestrian or another vehicle.

Light rail also has by far the worst crime record in the transit industry. According to the U.S. Department of Transportation, between 1996 and 2005, nearly twice as many homicides, well over twice as many rapes, and far more robberies and aggravated assaults were reported for every billion passenger miles carried on light-rail cars than on any other type of transit.[9]

There are several reasons why light rail might be more crime-friendly than other forms of transit. First, light-rail fares are collected largely on the honor system, so light-rail riders are at least 100 times as likely to evade fares as bus riders. While bus drivers control entry to buses and turnstiles control entry to heavy-rail systems, there are no barriers preventing people from boarding most light-rail trains, and few riders encounter fare inspectors. The "broken windows" theory suggests that rampant fare evasion emboldens potential criminals to attempt more serious crimes.[10]

Another reason why light-rail passengers may be more vulnerable than bus riders is that bus drivers are in the same compartment as the riders, while light-rail drivers are in their own secluded compartment. Light-rail drivers thus fail to serve as a deterrent to criminals.

These problems were exacerbated in Portland when the high cost of rail construction forced the transit agency to economize by abolishing its transit police department when the light-rail line opened in 1986.[11] This has resulted in a serious crime problem that exists to this day: Beatings, shootings, and robberies on board light-rail trains or near light-rail stations have become commonplace. The mayor of Gresham, Portland's largest suburb, says that residents are 10 times more likely to be robbed within a quarter mile of a light-rail station than elsewhere within his city.[12] Other crimes include hundreds of break-ins at park-and-ride stations, drug traffic, and violent assaults on board trains or at rail stations.[13] "The light rail has become a nightmare for us," one police sergeant told worried residents, adding, "I would not ride it at night — and I'm armed all the time."[14]

The Federal Transit Administration combines data for light rail and streetcars, so it is difficult to know whether streetcars suffer the same fatality and crime rates as light rail. They have the same characteristics, though. Streetcars are much heavier than pedestrians and autos, and modern streetcars also seal the drivers in their own private compartments. While streetcars might be a little safer than light rail, they are likely to be much more dangerous than buses.

RAIL CONSTRUCTION EXPERIENCE

Rail transit is far more expensive to build than highways or new bus lines. The average light-rail line built in recent years cost about $50 million per mile — enough

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Transit agencies have been especially unsuccessful at forecasting rail costs and revenues.

to build a four-lane freeway — while the average streetcar line costs about $25 million per mile of double tracks.[15] Because the average light-rail line carries only about 30 percent as many passenger miles per route mile as the average urban freeway lane, and the average streetcar line carries only about 5 to 10 percent as many, rail transit is a high-cost solution to many passenger transport problems.[16] Many people imagine that light-rail systems are simply scaled-up versions of bus systems. They assume transit agencies that have the skills to manage bus systems naturally have the skills to build a light-rail system. In fact, running a bus system and building a rail system require completely different skill sets, which is one reason so many rail projects have suffered huge cost overruns and other problems.

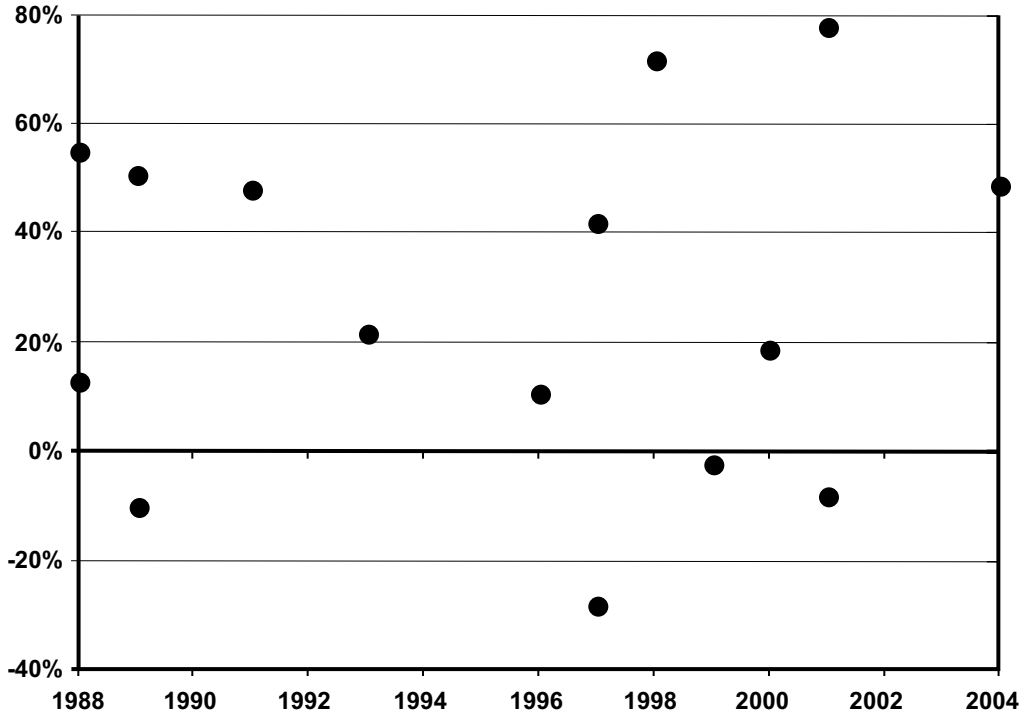
The biggest difference is that rail planning requires accurate long-range forecasting of revenues and costs. Bus managers do not need to forecast very far into the future, because buses wear out at predictable rates and transit riders make fairly predictable responses to changes in routes and fares. In contrast, rail projects can take a full decade to plan and build. This means rail agencies need to accurately predict the future costs of steel, cement, and other construction materials and know where people will want to go — not now, but decades from now. Since much of the cost of rail construction is financed by borrowing, project managers also need to forecast with accuracy the tax revenues that will be used to repay these debts.

It might be questioned whether anyone has the ability to accurately predict costs and revenues a decade in the future. But transit agencies have been especially unsuccessful at forecasting rail costs and revenues. A review of recent North American highway and transit projects found that, on average, rail projects went 41 percent over their initially projected costs, while highway projects went only 8 percent over.[17] A more recent review comparing 15 light-rail projects completed between 1988 and 2004 also found that they went over their projected costs by, on average, 41 percent (weighted by the finished cost of the projects).[18]

The transit agencies responsible for building projects that have suffered large cost overruns often publicly deny that they have ever gone over budget. Portland's TriMet agency, for example, claims that it has built its projects, including the west-side line completed in 1998, "on time and on budget."[19] In fact, after adjusting for inflation, TriMet spent at least 72 percent more on this line than the original projected cost. The agency skirts this fact by using the term "on budget" — a budget that TriMet increased (at taxpayers' expense) after the funds that were originally approved for the project proved inadequate.

Some people have suggested that rail cost projections are improving over time. However, this is not apparent in Figure 1, which charts cost overruns against the dates of project completions. While a few recent projects have been completed under their projected costs, the same was true for a 1989 project. The average overrun before 1997 was almost exactly the same (27 percent) as the average since then (28 percent). Light-rail projects

Figure 1: Light-Rail Cost Overruns



Source: Nasiru A. Dantata, et al., "Trends in U.S. Rail Transit Project Cost Overrun."

now under construction in Charlotte, Phoenix, and Seattle have all seen their costs swell close to 100 percent over their original projections, so light-rail cost overruns are certainly not a thing of the past.

Danish researcher Bent Flyvbjerg believes transit agencies deliberately underestimate the cost of rail projects so it will be easier to gain approval. Once construction begins, they can add to the costs, and political pressure will prevent anyone from seriously suggesting that the region stop throwing good money after bad. "Members of the public who value honest numbers should not trust cost estimates and benefit-cost analyses produced by project promoters and their analysts," says Flyvbjerg.[20]

"The systematic tendency to over-estimate ridership and to under-estimate 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."[21] The Federal Transit Administration requires transit agencies to make an initial comparison between proposed rail projects, bus improvements, and other alternatives. But once that initial comparison is made and a "locally preferred alternative" is selected, the remaining alternatives are dropped. If the initial analysis finds that rail might produce marginally greater benefits than improved bus service, then underestimating rail's costs will increase the apparent net benefits of selecting rail. When cost projections later increase, the lower-cost bus alternative is no longer available for consideration.

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Inability to foresee the future is one reason why cities and transit agencies should hesitate before committing to long-term rail projects.

For example, between 1997 and 2001, Denver's transit agency, RTD, prepared initial analyses of several proposed rail lines, estimating that these lines would cost $1.43 billion to construct. By the time RTD presented its plan to the region's voters in 2004, and after it had dropped all non-rail alternatives, the estimated cost had increased (in inflation-adjusted dollars) by 59 percent, to $2.27 billion.[22] Voters nevertheless approved the plan.

Little more than two years later, however, RTD announced that projected costs had increased by another 65 percent.[23] At the same time, the sales tax revenues needed to pay for the rail lines were falling more than $600 million short of the original projections.[24] This is now forcing the agency to make major cutbacks in some or all of its planned transit lines.

"No one could have foreseen a 50 percent increase in the cost of steel and a 212 percent increase in the cost of copper," insists RTD's CEO, Cal Marsella.[25] But this inability to foresee the future is one reason why cities and transit agencies should hesitate before committing to long-term rail projects.

RAIL OPERATIONS EXPERIENCE

In 1970, only eight American urban areas still had some form of rail transit. Today, that number has tripled, and more than a dozen formerly non-rail regions have opened new light-rail lines. Many of the transit agencies that built these lines claim they are successful, pointing to the number of people who ride their light-rail trains. But many of these riders might have been riding bus transit anyway, so rail ridership numbers are meaningless without a comparison to total transit figures.

An objective look at light-rail systems across the country would ask:

- Does light rail lead to increases in per-capita transit ridership?
- Does light rail reduce traffic congestion by increasing transit's share of travel?
- Does light rail save money on transit operations?
- Does light rail reduce energy consumption and air pollution?
- Does light rail attract economic development?

These are the advantages that are often claimed for light rail, and Kansas City should be able to learn from the experiences of the cities that have built such rail systems.

Light Rail And Transit Ridership

Proponents of rail transit often argue that trains will attract riders who won't ride a bus. Researchers have found, however, that rail attracts new riders not because they have a preference for trains but because transit agencies usually run rail lines on more frequent schedules with fewer stops (and thus higher average speeds) than bus lines. "There is no evident preference for rail travel over bus when quantifiable service characteristics such as travel time and cost are equal," concludes one study.[26] When buses are put on schedules that stop less frequently and thus operate at higher average speeds, they "should be as effective as rail in generating patronage," says another study.[27]

Table 1: Transit Trips Per Capita in Urban Areas With New Light-Rail Lines

	1980	1990	2000	2005	YEAR OPENED
Baltimore	70	60	53	47	1992
Buffalo	37	32	30	25	1986
Dallas	18	17	18	18	1996
Denver	33	34	36	40	1994
Houston	19	30	23	22	2004
Los Angeles	51	45	50	55	1991
Minneapolis	59	33	33	33	2004
Portland	49	50	59	65	1987
Sacramento	21	19	21	23	1987
Salt Lake City	28	31	27	41	1999
San Diego	26	29	38	33	1981
San Jose	22	32	37	25	1988
Saint Louis	46	23	26	23	1994

"Year Opened" is the fiscal year that light-rail riders first appear in transit agency reports.
Source: Federal Transit Administration, National Transit Database, various years.

A study prepared by the University of South Florida's Center for Urban Transportation Research found that new light-rail lines often resulted in a boost in transit ridership — in all probability, because of the increased frequencies and speeds — but that this growth was not sustained unless followed by the construction of even more light-rail lines. As a result, light rail "has not resulted in dramatic increases in the role that public transit plays in regional mobility." The study concludes, "one would not expect 10 to 30 miles of rail line to dramatically impact overall mobility."[28]

This can be seen by looking at trends in per-capita transit ridership in regions that have built light-rail lines. Because per-capita ridership accounts for population growth, it is a better indicator of the effect of transit improvements than is overall ridership — which might be expected to grow along with population even if transit agencies do nothing to improve service. As shown in Table 1, of the 15 urban areas that have opened new light-rail lines since 1980, only Denver, Los Angeles, Portland, and Salt Lake City have seen continuing increases in per-capita ridership. As the Florida study suggests, Denver, Portland, and Salt Lake have gained these increases by making continuing — and expensive — additions to their light-rail systems.

The numbers for Los Angeles, however, are deceptive. Between 1980 and 1985, the Los Angeles Metropolitan Transit Authority (MTA) greatly increased transit ridership by improving bus service without raising bus fares. But the agency began building several rail lines in 1985. Large cost overruns forced MTA to reduce bus service and increase fares. The result was an 11-percent decline in ridership by 1990, and a 17-percent decline by 1995. The NAACP sued, saying that MTA was

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building rail lines to white neighborhoods while it was cutting bus service to black and Hispanic neighborhoods. MTA agreed to restore bus service and greatly reduced its rail construction program. This restored ridership to 1985 levels by 2000, and today ridership greatly exceeds 1985 levels. Most of the increase in per-capita ridership between 1990 and 2005 can be attributed to improved bus service; less than 15 percent is from light rail.

A similar lawsuit has been filed in the San Francisco Bay Area, charging that the region has created two "separate and unequal transit systems," expanding the BART heavy-rail system for middle-class suburbanites at the expense of bus service for "low-income people of color."[29] Such discrimination appears inevitable when a primary purpose of rail transit is supposed to be attracting relatively wealthy people out of their cars, while bus transit is left to people who have no access to automobiles.

The Los Angeles and San Francisco examples illustrate why rail transit has not significantly increased transit ridership in most cities: Rail transit is so expensive that transit agencies are often forced to cut — or, at least, fail to improve — bus service in areas not served by rail. Although BART carries many riders, per-capita transit ridership in the San Francisco Bay Area was higher before BART was built than it is today.

San Jose transit suffered an even greater ridership decline — not because of cost overruns, but because of revenue shortfalls. When the 2001 dot-com bust reduced the number of jobs in San Jose, the sales taxes supporting the region's transit system declined. Because a large share of those revenues were dedicated to repaying debt incurred to build light rail, the transit agency had to reduce bus and rail transit service by 20 percent. The result was a 33-percent decline in ridership, almost twice as great as the loss in jobs. San Diego's decline in per-capita ridership after 2000 happened because of similar, but smaller, service cuts.

No one can predict when a recession will take place, so transit agency forecasts typically assume a steady growth in tax revenues to support the system. When this assumption proves wrong, an agency that is running only buses might have to cut bus service. But an agency that is heavily in debt to pay for a rail line cannot arbitrarily reduce its mortgage payments. As a result, it must make even greater cuts in transit service than a decline in revenues alone would ordinarily necessitate. For example, if half of an agency's revenues are going to repay its debt, and revenues decline by 10 percent, the agency will have to cut service by at least 20 percent, or default on its debt.

If cost overruns and revenue shortfalls pose two grave risks to a transit system that is building rail transit, a third risk appears after the rail system is completed. About every 30 to 40 years, almost everything on the system — rails, roadbed, electrical facilities, railcars, and stations — wears out and must be replaced. The oldest modern American light-rail lines are less than 30 years old, and so haven't reached this point. But the Washington, D.C., Metro and San Francisco BART systems are both more than 30 years old, and are facing serious financial crises.

BART officials say the system needs $11 billion to replace its aging

infrastructure, and only has funding for half of that. The other half will have to come from increased taxes, higher fares, or reduced services.[30] Meanwhile, Washington, D.C.'s Metropolitan Area Transit Authority says that it needs $12 billion to replace and rehabilitate its rail system, and only has $1.5 billion of that in available funds.[31] As a result, the Metro rail system is suffering a series of breakdowns and failures that impose huge costs on riders.[32]

It is worth noting that, in both cases, the costs of rehabilitating the rail systems are estimated to be greater than the original cost of construction. While this does not account for inflation, the point is that rail transit requires an ongoing heavy investment in infrastructure for which few transit agencies are ready to pay. When the financial crunch comes, transit riders are likely to suffer.

This explains why so many transit companies switched from rails to buses: It was far less costly to switch than to rehabilitate worn-out rail infrastructure. In 1910, more than 750 American cities had streetcars. By 1970, only six cities still had streetcars and two others had subways or elevated rails.[33]

In sum, the high cost of rail transit means that rail construction often leads to reductions in transit service and losses in transit ridership, thus undermining the goal of transit improvements. Cost overruns, revenue shortfalls, and the long-range costs of maintaining rail systems can all force cuts in transit service that reduce ridership. While Denver, Portland, and Salt Lake City seem to have escaped these perils to date, the harm done to transit service — at some stage in their rail histories — in Baltimore, Buffalo, Los Angeles, San Diego, San Jose, and Saint Louis, outweighs the benefits in other cities.

Light Rail and Congestion

If rail transit cannot significantly increase transit ridership, it is certainly not going to reduce congestion. If anything, light rail makes congestion worse by occupying street space and crossing streets at grade. The Minneapolis light-rail line, for example, disrupted the coordinated traffic signals on the parallel Hiawatha Avenue, adding at least 20 minutes to the time required to drive from Bloomington to downtown Minneapolis.[34]

Even if light rail did not disrupt traffic, it does not take enough cars off the road to relieve congestion — at least, not enough congestion to justify its cost. Brookings Institution economist Clifford Winston and UC Berkeley economist Vikram Maheshri compared the costs of light- and heavy-rail systems with the benefits to transit riders and the congestion relief they provided. They found that, with the exception of BART in San Francisco, "every system actually reduces welfare and is unable to become socially desirable even with optimal pricing." In other words, the subsidies required to build and operate the systems were greater than the benefits enjoyed by transit riders and the congestion relief produced for those who continued to drive.[35]

Another view of this can be seen in Table 2, which compares transit's share of total motorized travel in new light-rail regions in 2005 with the share five years before each region opened its first light-rail line. A five-year interval was selected

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because many regions lost market share during the construction period as resources that might have been devoted to improved transit service went to rail construction instead.

In most new light-rail regions, transit's share of travel has declined since before the area's first light-rail line opened. Transit's share increased in only two regions, Denver and Minneapolis. In no region has light-rail transit taken even 0.3 percent of cars off the road.

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Of course, most congestion takes place at rush hour, when many (though far from all) of the cars on the road are commuters. Has rail transit managed to increase overall transit's share of commuter traffic? Table 3, which includes regions with new heavy-rail lines (Atlanta, Miami, San Francisco, and Washington, D.C.), as well as new light-rail lines, clearly shows that it has not.

Transit's share of commuting has declined steadily in almost every region. In some regions where transit's share enjoyed an uptick, the gain was often only temporary. The only exception is the San Francisco-Oakland area, where transit's share of commuting is about the same today as it was before the BART system opened.

Transit's share of commuting in 2000 and 2005 is very small in almost all of these regions. In addition to San Francisco and Washington, D.C., the only urban areas where transit carries more than 10 percent of commuters are New York, Chicago, and Boston. All of these communities have rail transit, but it is heavy rail rather than light rail. Moreover, rail transit isn't essential for high rates of transit commuting: Honolulu has no rail service, yet 8.7 percent of its commuters take transit to work. Seattle also has high rates of transit ridership even though it did not have rail transit until recently (and the rail that it has carries less than 2 percent of its transit riders).

Many urban plans are focused on increasing population densities in order to increase transit ridership. Research shows that people who live in denser neighborhoods tend to drive less and ride transit more.[36] However, this is mostly a matter of self-selection: People who want to drive less choose denser neighborhoods.[37] At the scale of urban areas, population density has almost no effect on commuting. As Figure 2 shows,

Table 2: Transit's Share of Travel, in 2005 and Before Light-Rail Construction

	2005	BEFORE LRT	CHANGE
Baltimore	1.4%	2.0%	-0.6%
Buffalo	0.6%	1.4%	-0.8%
Dallas	0.6%	0.6%	0.0%
Denver	1.4%	1.3%	0.1%
Houston	1.0%	1.0%	0.0%
Los Angeles	1.8%	1.9%	-0.1%
Minneapolis	1.1%	0.9%	0.2%
Portland	2.2%	2.5%	-0.3%
Sacramento	0.7%	0.9%	-0.2%
Salt Lake City	1.2%	1.2%	0.0%
San Diego	1.1%	1.4%	-0.3%
San Jose	0.9%	1.1%	-0.2%
Saint Louis	0.7%	0.7%	0.0%

Transit's share of travel is measured by comparing transit passenger miles from the National Transit Database (ntdprogram.gov) with the sum of transit passenger miles and roadway miles. Roadway miles, in turn, are calculated by multiplying vehicle miles of travel — as reported in table HM72 of the United States Department of Transportation's annual Highway Statistics (tinyurl.com/2cc3oj) — by 1.6, which is the average number of occupants per vehicle as reported by the U.S. DOT's National Household Transportation Survey (tinyurl.com/2xsqa6).

Table 3: Transit's Share of Commuting

	1970	1980	1990	2000	2005	YEAR OPENED
Atlanta	10.4%	9.1%	5.9%	4.1%	4.0%	1976
Baltimore	16.9%	12.3%	9.3%	7.4%	7.6%	1984
Buffalo	12.3%	16.4%	5.5%	4.1%	3.6%	1986
Dallas	5.7%	4.0%	2.7%	2.2%	1.9%	1996
Denver	4.8%	6.4%	4.7%	4.9%	4.3%	1994
Houston	6.0%	3.5%	4.5%	3.8%	3.2%	2004
Los Angeles	4.8%	5.9%	5.6%	6.0%	5.8%	1988
Miami	6.3%	4.3%	3.7%	3.3%	3.6%	1984
Minneapolis	9.5%	10.0%	6.2%	5.5%	4.8%	2004
Portland	7.0%	9.8%	6.7%	7.7%	7.6%	1987
Sacramento	2.7%	4.1%	2.8%	2.9%	2.4%	1987
Salt Lake City	2.4%	5.5%	3.5%	3.6%	3.1%	1999
San Diego	4.8%	3.5%	3.5%	3.6%	3.3%	1981
San Francisco	16.0%	16.8%	14.5%	14.6%	15.9%	1972
San Jose	2.4%	3.1%	3.1%	3.6%	3.3%	1989
Saint Louis	9.2%	6.9%	3.5%	2.9%	2.8%	1994
Washington, D.C.	17.6%	16.7%	15.6%	13.7%	15.7%	1976

"Year Opened" is the fiscal year that rail riders first appear in transit agency reports.
Source: Journey-to-work data for urbanized areas from the decennial censuses and the American Community Survey for 2005.

the highest-density urban area in the United States is seven times denser than the lowest-density areas, yet the share of people who drive to work in the higher-density area is only about 8 percent less.

The factor that seems to have the greatest influence on transit commuting is not the mode of transit or the region's population density, but the concentration of jobs in a central transit hub. All of the urban areas shown in Figure 2 where less than 85 percent of commuters drive to work are either university towns or cities with large numbers of downtown jobs. University towns (such as Ithaca, NY, the lowest dot on the left side of the chart) have high rates of walking and cycling to work, and only moderate transit rates.

The highest transit rates are in New York City (the lowest dot on the right side of the chart), which has more than 2.5 million jobs in Manhattan. San Francisco, Boston, Washington, D.C., and other regions with high levels of transit commuting also have downtowns with major concentrations of jobs. Transit does not work as well in carrying commuters to suburban jobs, even in New York or San Francisco. As jobs have suburbanized, transit's share of commuting has declined.

Unlike New York, San Francisco, and Boston, San Jose has only a small percentage of jobs in its downtown. Its light-rail cars carry an average of just 13 people, which is half the national average, and by most measures it is the worst-performing transit system in the country.[38] Kansas City

The factor that seems to have the greatest influence on transit commuting is not the mode of transit or the region's population density, but the concentration of jobs in a central transit hub.

Experience suggests that there is little synergistic effect that results from adding new rail lines to cities that are not suited for rail in the first place.

has only about 50,000 jobs in its central business district, less than 7 percent of the jobs in the entire metropolitan area. This suggests that, like San Jose, it is a poor candidate for rail transit.[39]

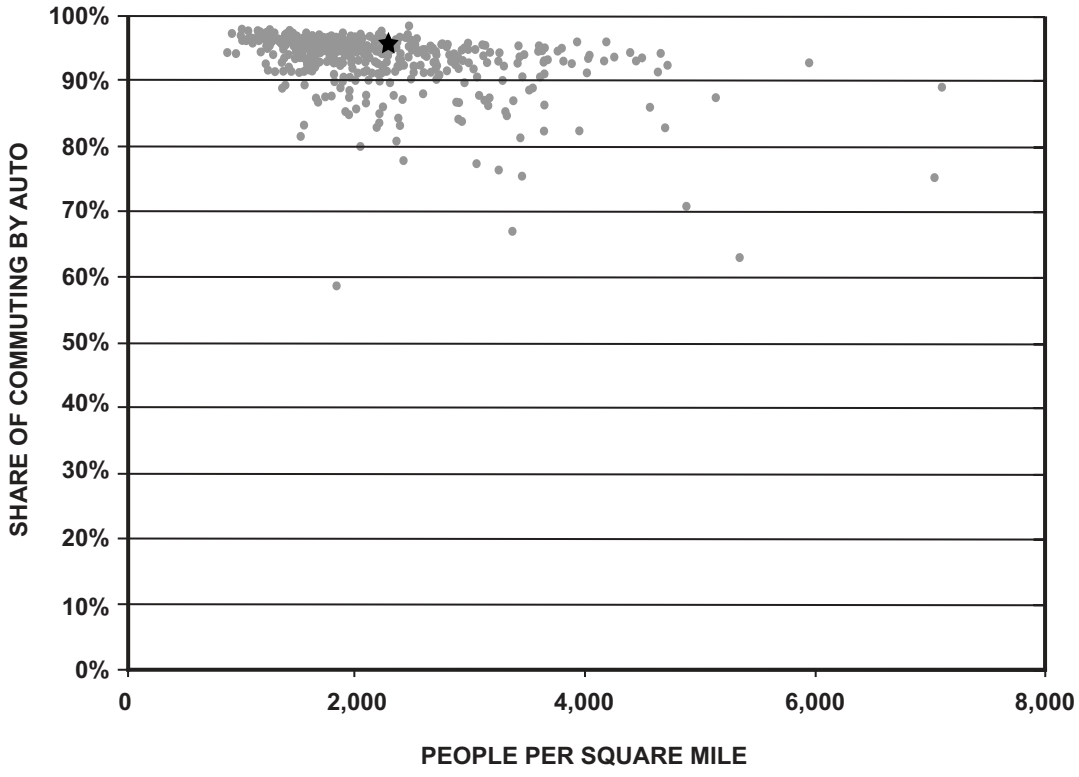
Rail advocates sometimes argue that conclusions should not be drawn from cities that have only built one or two rail lines; they say that rail transit will really only take off after a complete network of lines has been built. However, experience in Dallas, Saint Louis, and other cities suggests that there is little synergistic effect that results from adding new rail lines to cities that are not suited for rail in the first place because they don't have a large concentration of jobs at the urban core.

When Dallas opened its second light-rail line in 2002, nearly doubling the length of its light-rail system, rail transit ridership increased by about 50 percent. But overall, transit lost as many bus riders as it gained rail riders. In effect, all new rail riders were simply former bus riders. Saint Louis did not fare even that well after it opened a second light-rail line in 2001, doubling the length of its rail system. Bus ridership dropped by about 15 percent — but rail ridership scored almost no gains at all. Total transit ridership in all years since 2001 has been lower than it was in 2000, before the new line opened.

Light Rail Operating Costs

On average, light-rail fares covered a mere 28 percent of rail operating costs — and, of course, 0 percent of rail capital

Figure 2: Density vs. Commuting by Auto



Each dot represents an urbanized area identified in the 2000 census. The star represents Kansas City.
Source: Census Bureau.

Table 4: 2005 Operating Cost Per Passenger Mile and Riders Per Vehicle

	OPERATING COST			RIDERS PER VEHICLE	
	BUS	LIGHT RAIL	DIFFERENCE	BUS	LIGHT RAIL
Baltimore	0.79	1.26	59%	13	19
Boston	1.07	0.63	-41%	9	40
Buffalo	1.09	1.48	36%	7	18
Cleveland	0.77	0.69	-10%	10	18
Dallas	0.80	0.54	-33%	8	25
Denver	0.65	0.57	-12%	12	13
Houston	0.42	0.55	31%	12	32
Los Angeles	0.55	0.47	-15%	16	33
Minneapolis	0.78	0.31	-60%	11	35
New Jersey	0.99	1.05	6%	14	24
Philadelphia	0.78	0.75	-4%	14	19
Pittsburgh	0.92	1.33	45%	9	16
Portland	0.82	0.38	-54%	10	27
Sacramento	1.27	0.67	-47%	8	18
Salt Lake City	1.20	0.27	-78%	5	28
San Diego	0.83	0.26	-69%	9	27
San Francisco	0.97	0.85	-12%	13	22
San Jose	1.47	1.48	1%	8	13
Saint Louis	0.83	0.36	-57%	8	27

Source: 2005 National Transit Database, tables 12 (operating costs by mode) and 19 (service supplied and consumed). "Riders per vehicle" is calculated by dividing passenger miles by vehicle revenue miles.

costs — in 2006.[41] By comparison, bus fares covered 38 percent of bus operating costs.

Light-rail advocates often compare rail and bus operating costs per passenger mile to show that rail costs less than buses. But this is misleading, because rail routes generally replace buses in high-use corridors, while many other bus routes that are included in agency averages carry far fewer riders. Because most operating costs are fixed per vehicle mile, bus routes that carry more passengers will have lower costs per passenger mile.

Table 4 shows that — with significant exceptions, such as Baltimore, Buffalo, Houston, and Pittsburgh — light-rail operations usually do cost less than the average buses in each region. However, the buses in many of these regions carry an average of less than 10 riders at a time (calculated by dividing passenger miles by vehicle miles). The National Transit Database lists many bus agencies that keep their operating costs below 20 cents per passenger mile — much less than any light-rail line — by carrying an average of more than 20 passengers per bus. Because most light-rail lines carry an average of 25 passengers per vehicle, it seems likely that the buses that formerly

Total Saint Louis transit ridership in all years since 2001 has been lower than it was in 2000, before the new light-rail line opened.

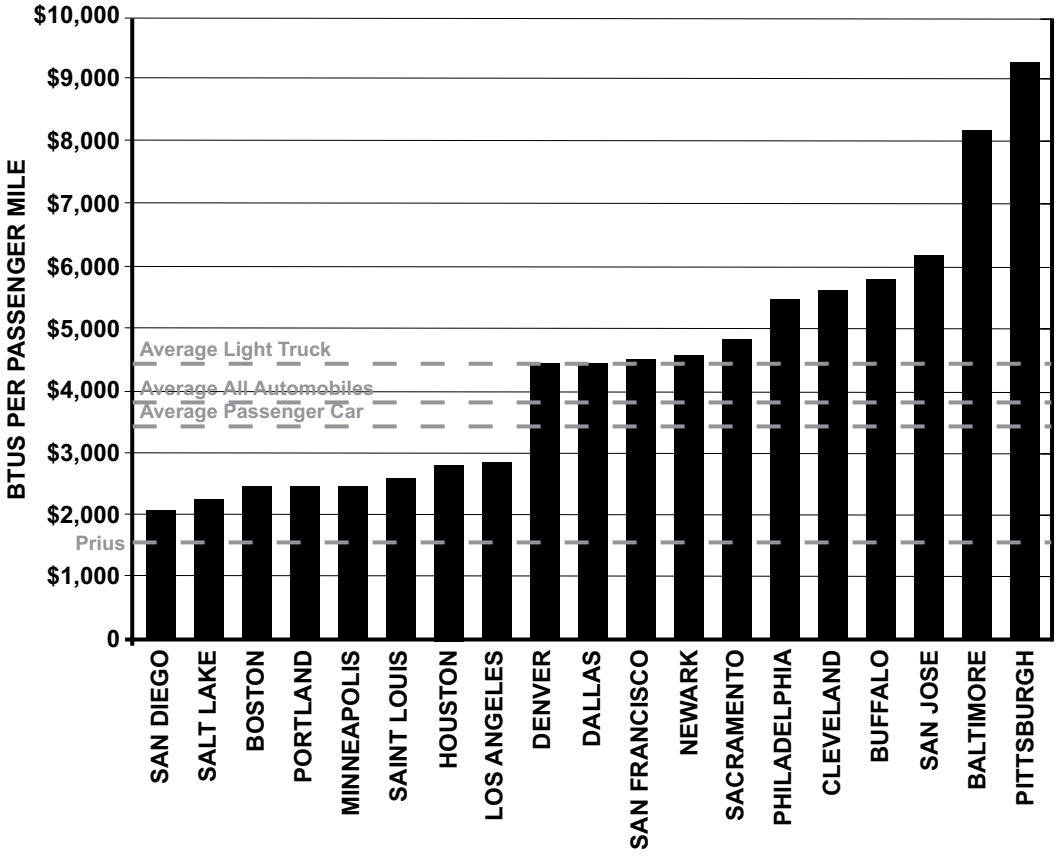
operated in light-rail corridors also carried significantly more than 10 people per bus.

Light rail not only cannibalizes the best routes from buses, it is also invariably supported by a feeder bus system that receives little use. When light-rail lines open, transit agencies typically cancel all parallel bus routes and reroute the buses to light-rail stations. This means that many people who had once lived a short walking distance from a convenient bus line headed toward downtown now had to take a feeder bus to a light-rail station instead. Since many people choose to drive or be driven to light-rail stations, these feeder buses end up carrying few riders and so have high operating costs per passenger mile. The low ridership on these feeder buses is averaged in with other city buses, further boosting average operating costs per passenger mile.

For example, before Salt Lake City began building light rail, it was spending about 30 cents per passenger mile (adjusted for inflation to 2005 dollars) to operate buses. By 2005, several years after it opened its first light-rail line, Salt Lake City was running more buses than ever but carrying only a little more than half as many bus passenger miles. This increased bus costs to $1.20 per passenger mile. The light rail cost only 27 cents per passenger mile, but the transit system as a whole cost 73 cents per

Light rail not only cannibalizes the best routes from buses, it is also invariably supported by a feeder bus system that receives little use.

Figure 3: Light Rail Energy Consumption



Source: 2006 Provisional National Transit Database, tables on “energy consumption” and “service.” Automobile data from the National Transportation Energy Databook, 26th edition.

passenger mile — more than twice the cost of the buses alone before light rail.[42] It appears highly unlikely that light rail can result in any operational savings. This is especially true when the periodic costs of replacing and rehabilitating rail equipment are counted as maintenance costs, as they should be, rather than as capital costs, as most transit agencies classify them.

Light Rail and the Environment

Many people assume that light rail will be certain to use less fuel, emit less pollution, and produce less greenhouse gases than buses or autos. But this is far from guaranteed. According to data published by the Federal Transit Administration, a majority of light-rail systems consume more energy per passenger mile than the average automobile, and virtually all of them consume more energy than a hybrid automobile such as a Toyota Prius (Figure 3).

Light-rail lines in California and Oregon produce significantly less greenhouse gases than the average auto because half or more of the electricity consumed in those states comes from hydroelectric power. Missouri, which gets nearly 90 percent of its electricity from fossil fuels, is not so fortunate.[43] The Saint Louis light-rail system, for example, emits 0.48 pounds of CO_2 per passenger mile, which is only slightly lower than the average passenger car's emissions of 0.54 pounds per passenger mile.[44]

To make matters worse, light rail does not operate in isolation; instead, as noted above, it requires support from large numbers of feeder buses. Because many people who have cars tend to drive to light-rail stations, these feeder buses tend to carry far fewer passengers, on average, than the buses that the light-rail trains replaced. The net effect is that for even those transit agencies that have energy-efficient light-rail lines, the addition of rail means that transit systems often end up consuming more energy, and emitting more greenhouse gases, when considered as a whole.

For example, before Salt Lake City opened its first light-rail line, its buses carried an average of 8.9 riders at a time. After it opened the light-rail line, it converted all parallel bus routes to feeder lines and actually increased the number of vehicle miles of bus service. Yet the average number of riders on those buses fell almost in half, to 4.5. While the light-rail trains consumed less energy than the buses, when all transit is considered together, energy consumption per passenger mile increased by 30 percent and greenhouse gas emissions per passenger mile rose by 32 percent.

Similarly, after light-rail lines opened in Houston, Portland, and Saint Louis, energy consumption per passenger mile increased by 9 percent, 5 percent, and 13 percent, respectively. Greenhouse gas emissions per passenger mile increased by a respective 10 percent, 13 percent, and 17 percent.

A few light-rail lines have resulted in operational energy savings. The new light-rail line in Minneapolis reduced energy consumption per passenger mile by 3 percent, while a new line in San Diego reduced it by 9 percent. But construction consumes enormous amounts of energy and emits huge amounts of greenhouse

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The energy costs of road construction are distributed over a larger number of users, and the cost per user is much lower than for rail transit.

gases. The tiny savings that might result from rail operations is likely to be more than counterbalanced by the energy and emissions required to build the line.

For example, the environmental impact statement for Portland's North Interstate light rail estimated that the line would save about 23 billion BTUs per year, but that construction would cost 3.9 trillion BTUs.[45] Thus, it would take 172 years for the energy savings to make up for the construction cost. In fact, long before 172 years has elapsed, automobiles are likely to be so energy efficient that light rail will offer no savings at all.

Similarly, estimates project that the North Link light-rail line in Seattle will save about 346 billion BTUs of energy in 2015, declining to 200 billion in 2030.[46] Construction is estimated to require 17,439 billion BTUs.[47] If the energy savings remains constant at 200 billion BTUs after 2030, the savings will not make up for the cost until 2095. Because rail lines need extensive, energy-consuming, and greenhouse-gas–emitting reconstruction every 30 to 40 years, though, the trivial savings will never cancel out the costs.

Building roads also requires energy. But urban roads are much more heavily used than any rail lines outside of New York City. So the energy costs of road construction are distributed over a larger number of users, and the cost per user is much lower than for rail transit.

Light Rail and Urban Development

Rail advocates will often admit that light rail and streetcars do not relieve congestion. They argue, however, that rail transit attracts new development and that the taxes on those new developments will ultimately pay for the rail construction. For example, officials from Portland often claim that construction of the $100 million streetcar line led to billions of dollars in investments.

In fact, rail transit does not stimulate new regional investment. A literature review by University of California planning Professor Robert Cervero and Parsons Brinckerhoff consultant Samuel Seskin found that "urban rail transit investments rarely 'create' new growth." At best, rail investments may "redistribute growth that would have taken place without the investment." The main type of redistribution they noted was from the suburbs to downtown, which helps explain why downtown property owners often strongly support rail transit projects.[48]

When Portland opened its first light-rail line in 1986, it rezoned the land near light-rail stations for high-density, mixed-use developments. Ten years later, not a single such development had been built. "It is a myth to think that the market will take care of development along transit corridors," declared Portland City Commissioner Charles Hale, who proposed a number of subsidies to promote such developments.[49] Eventually, those subsidies included:

- Ten years of property tax waivers for high-density residential units;
- Below-market land sales of school playgrounds, parks, and other public land;
- Tax-increment financing of parking garages and other amenities that developers would normally have to pay for themselves;
- Direct grants to developers.

Subsidies to all Portland-area transit-oriented developments since 1996 have totaled something close to $2 billion. Most of these subsidies come from tax-increment financing, which diverts property taxes away from schools, fire, police, and other essential services to subsidies for developers. Typically, a city using tax-increment financing projects the future stream of diverted tax revenues and sells bonds that will be repaid by those taxes. The proceeds from these bond sales are used to support developments in urban renewal areas.

Portland's urban renewal districts (which are districts where tax-increment financing is allowed) closely follow the routes of streetcar and light-rail lines. Portland has authorized the sale of $665 million worth of bonds to support developments along the streetcar line, and another $860 million to support developments along the light-rail lines.[50]

Portland has also used subsidies to entice developers to build high-density developments along bus routes. For example, the city has used property tax breaks and other subsidies to support high-density, mixed-use developments on and near Southeast Belmont, nearly two miles from the nearest light-rail station.[51]

In short, Portland's experience has been that rail transit without subsidies leads to no new developments. However, subsidies do lead to new developments — with or without rail transit.

Despite this, rail advocates maintain that such developments were stimulated by Portland's "development-oriented" rail transit.[52] Former Commissioner Charles Hale, now retired from politics and working for a consulting firm that tries to sell streetcars to other cities, writes that Portland's "streetcar line has sparked more than $1.5 billion (and growing) in new development."[53] Such statements ignore the hundreds of millions of dollars in government subsidies that were directed to those developments.

Other regions have also found that rail transit does not lead to development. Professor Cervero is an advocate of transit and transit-oriented developments. But when he looked at developments along the San Francisco BART line, he found, "Population has grown faster away from BART than near it."[54] Similarly, a study of Washington, D.C.'s Metrorail system found that there has been a "paucity" of development near rail stations. The report recommended that Washington's transit agency do more to "encourage" (i.e., subsidize) development.[55] But if the heavily used San Francisco BART and Washington Metrorail systems are not popular enough to encourage development without subsidies, how will much more lightly used light-rail or streetcar lines promote such development?

Instead of promoting development, construction of light-rail and streetcar lines can actually harm existing businesses by reducing auto access during the construction phase, and reducing available parking after construction is complete.[56] Houston has seen new investment on Washington Avenue and other streets a few miles away from the city's new Main Street light-rail line, because the restaurants, shops, and other businesses that lost customers during light-rail construction sought new locations.

Instead of promoting development, construction of light-rail and streetcar lines can actually harm existing businesses by reducing auto access during the construction phase, and reducing available parking after construction is complete.

Congress has inadvertently given transit agencies incentives to propose high-cost solutions to transit problems.

Portland has also learned that, despite the name, transit-oriented developments must be automobile-oriented or they will fail. One development in the Portland suburb of Beaverton received $12 million in subsidies, yet the developer went bankrupt because of the lack of parking.[57] Another developer finished construction on the condition that he could include 300 parking spaces.[58] Other developments succeeded only because managers opted to look away when residents parked in fire lanes or on sidewalks.[59] A survey of residents of Orenco Village, the pride of Portland-area planners, found that the high-density, mixed-use development next to a light-rail station had failed to "significantly alter resident travel habits."[60]

In sum, rail transit does not play a key role in promoting economic development. In many cases, neighborhood redevelopments follow rail transit only if the projects are supported by other subsidies in addition to the rail line. Where development does take place without additional subsidies, it is at best a zero-sum game — all the rail line does is move a development that would have taken place somewhere else in the urban area to a location along the rail line.

WHY LIGHT RAIL?

Light rail is expensive, it takes years to plan and build, it does little to relieve congestion and often makes the problem worse, it produces little or no environmental or redevelopment benefits, and it can provoke financial crises for transit agencies that may force severe reductions in service. So, it may be reasonably asked, if light rail is so bad, why are so many cities building it?

The simple answer is that Congress has inadvertently given transit agencies incentives to propose high-cost solutions to transit problems. In 1973, when most transit agencies were focusing on improving their bus service, Congress passed a law allowing cities to cancel planned interstate freeways and apply the funds to transit instead.[61]

Several cities, including Boston, Portland, and Sacramento, took advantage of this law. But there was a catch: The funds could only be used for capital improvements, not for operations. The federal funds released by canceling an interstate freeway might be large enough to double a transit agency's bus fleet, but no transit agency could run that many new buses without an increase in operating funds.

Light rail was the solution to this dilemma. Light rail would allow cities to spend large amounts of federal funds on capital improvements without significantly increasing the funds needed to operate the transit system. In short, light rail first became popular precisely because it was expensive.[62]

In 1981, Congress repealed the 1973 law, but dedicated — for the first time — a share of federal gasoline taxes to mass transit. Historically, federal highway funds were allocated to the states based on their population, land area, and road mileage.[63] Because each state's share of funds was effectively fixed, the states had an incentive to spend that share as effectively as possible.

Congress did not create such a formula for allocating transit funds. By default, federal transit funds became a commons, giving cities an incentive to get as large a share of those funds as possible. Initially, the cities that proposed the most expensive rail transit projects received the most money. Soon, dozens of cities were proposing to build light-rail lines — again, not because rail was efficient, but because it was expensive and would give the cities that built it a greater share of federal funds.

This led to the creation of a new special-interest lobby, comprising engineering and construction companies, railcar manufacturers, and financial institutions that profited from rail construction. Many of these companies joined the American Public Transportation Association, a Washington, D.C., lobby group that spends more than $20 million per year promoting transit subsidies.[64] Once a city builds its first light-rail line, the rail transit lobby works hard to promote the construction of additional lines. This helps explain why cities like Baltimore and San Jose keep building new light-rail lines even though the high cost of the first lines they built contributed to a loss in transit riders.

Recently, the Congressional Research Service suggested that Congress should rectify this problem during the next round of transportation reauthorizations by giving transit money to cities according to a formula similar to the one used for highways. "Funds distributed according to transit ridership," the agency noted, "would reward areas that commit their own resources successfully to providing transit service."[65] Until this is done, transit agencies are likely to continue committing large amounts of money to inefficient light-rail lines.

ALTERNATIVES FOR KANSAS CITY

If Kansas City truly wants to improve; transit service, there are many possible ways to do so. This study will consider five alternatives:

- The light-rail plan approved by voters in 2006;
- A shorter, "starter" light-rail or streetcar line;
- Improvements in bus service, including more bus–rapid transit routes;
- The "Las Vegas plan," which increases service without increasing taxes by contracting bus operations out to private companies;
- The "Atlantic City Jitney plan," which would encourage private operators to run bus services, with minimal tax subsidies, in many parts of the Kansas City area.

The 2006 Plan: The plan approved by the voters in 2006 would build a 27-mile light-rail line along with an aerial tramway. When the measure was placed on the ballot, proponents estimated that the plan would cost less than $1 billion.[66] However, the Kansas City Area Transportation Authority (KCATA) now estimates that this light-rail line would cost between $1.4 to $1.6 billion to build, and would have annual operating costs of at least $11 million — which is a substantial fraction of KCATA's 2007 operating budget of $71 million.[67]

The plan's proponents also presumed that the city could get federal funds to cover half the costs. Because the 2006

Once a city builds its first light-rail line, the rail transit lobby works hard to promote the construction of additional lines.

For the cost of one start-up rail project, Kansas City could add at least 10 bus–rapid transit routes with operating money left over to improve bus services on other routes as well.

plan diverted funds from the bus system to build the rail line, though, the KCATA warns that it could result in as much as a 40-percent reduction in bus service.[68] As a result, the Federal Transit Administration says that the plan will not get its approval for funding. To make it feasible to build the light-rail line without reducing bus service, voters would have to approve at least a doubling of the existing transit sales tax and the federal government would have to fund half the cost — which is uncertain, given all the other cities that have applied for federal support for their rail projects.

Starter Light Rail: The *Kansas City Star* and the KCATA citizen task force have each proposed starter light-rail or streetcar lines that are only 10 to 14 miles long. The *Star* estimates that a starter route will cost about $35 million per mile to construct, and that operating a 10-mile route will cost about $7 million per year, or 10 percent of KCATA's current operations budget.

Both plans propose to use vehicles that are more like streetcars than light rail, meaning their capacities would be no greater than buses. But the streetcars would operate in reserved lanes, meaning lanes formerly open to auto traffic, and would be given priority at traffic signals, meaning they would disrupt any signal coordination on both the rail street and cross streets. Both factors would significantly increase congestion on and near any street where the streetcar operates.

No one has estimated how many people would ride a starter rail line. But the Star admits that transit fares are not likely to cover much more than 20 percent of operating costs.

The *Star* proposes a new quarter-cent sales tax to pay for the starter line, while the citizen task force suggests a three-eighth-cent tax. Even these taxes are not enough; the *Star* suggests, among other things, new parking fees, new taxes on nearby property owners, and support from suburban governments whose neighborhoods would be serviced by the starter line.[69]

The *Star* believes that a starter line "could inspire a regional rail system."[70] But where will the money for that system come from? If the system eventually includes, say, five 10- to 15-mile routes, and each route requires a quarter- to three-eighth-cent sales tax on top of the existing sales tax devoted to bus services, then taxpayers could be asked to pay the equivalent of a 3- to 4-cent sales tax just for Kansas City transit services.

It is worth noting that light-rail cars weigh considerably more than streetcars, so roadbeds designed to carry streetcars are inadequate to support light rail. Anyone who imagines that a streetcar line can easily be upgraded to light rail will be disappointed to learn that the cost of such an upgrade would be a substantial fraction of the cost of building for light rail in the first place.

Bus–Rapid Transit: Instead of building a rail line, this alternative would continue or accelerate the expansion of KCATA's successful bus–rapid transit lines. The region's first bus–rapid transit line boosted corridor ridership by close to 30 percent.[71] The 9-mile Troost route is estimated to have start-up costs of about $30 million and annual operating costs of about $350,000.[72] So, for the cost of one start-up rail project, Kansas City could add

at least 10 bus–rapid transit routes with operating money left over to improve bus services on other routes as well.

Operating in the same streets as a streetcar or starter light-rail line, bus–rapid transit can run as fast and as frequently as any railcar. While a few people may say they would ride a train but not a bus, the reality is that buses are safer than light rail from the standpoints of both accidents and crime. Thus, there is no reason to expect a starter light-rail line to attract more new riders than a bus–rapid transit line that offers equivalent service on the same route.

This means that bus–rapid transit can attract as many new riders as light rail for approximately one-tenth the cost. Alternatively, for the same investment, bus–rapid transit can attract 10 times as many riders as light rail or streetcars. Or, for those who think rail is more appealing to riders than mere buses, this means that light rail must attract 10 times as many riders as bus-rapid transit — that is, increase ridership by 300 percent — to be cost-effective. No light-rail line has ever attracted this many new transit riders.

One of the advantages buses have over rail is that they can easily serve many different neighborhoods by diverging from corridor or trunk routes. To serve those same neighborhoods, rail must be supplemented by feeder buses, which requires transit riders to transfer from bus to rail, or from rail to bus. Transit analysts know that riders are reluctant to make such transfers, and so a system that minimizes transfers will actually attract more riders.

The Las Vegas Alternative: Between 1990 and 2000, Las Vegas increased its bus services tenfold. The new system carries seven times as many riders and nearly quadruples the city's per-capita ridership. No city that built rail lines has seen anything close to this kind of growth in ridership. The Las Vegas urban area has about the same number of people as the Kansas City urban area today, yet the Las Vegas bus system provides almost twice as many miles of service and carries more than three times as many rides per capita as the Kansas City system.[73]

Las Vegas was able to make these improvements economically by contracting out all of its bus operations to a private company. Contracted bus services cost only about 50 to 60 percent as much, per bus mile, as buses operated directly by transit agencies. For example, Denver contracts out close to half of its bus services, and spends only 54 percent as much on the contracted buses as on the buses it operates itself. Las Vegas spends just 66 percent as much, per bus mile, on its contracted operations as Kansas City spends on the buses operated by KCATA.[74]

Contracting out Kansas City bus operations would save enough money to increase bus services by 50 to 70 percent, or more, without tax increases. This could fund several new bus–rapid transit lines, as well as many other sorts of improvements. Much of the capital funding needed to buy new buses could come from the federal government, which historically has funded about 80 percent of KCATA's bus purchases.

The Las Vegas alternative would allow Kansas City to make significant improvements in its transit system at no additional cost to taxpayers. Instead of an

One of the advantages buses have over rail is that they can easily serve many different neighborhoods by diverging from corridor or trunk routes.

If taxpayers spent no money on public transit, private transit providers would step in to fill at least part of the gap in transportation needs.

inflexible rail line that requires continuous expensive maintenance, Kansas City would have a first-class bus system that could provide fast, frequent service to those who want an alternative to the automobile.

The Atlantic City Jitney Alternative: If taxpayers spent no money on public transit, private transit providers would step in to fill at least part of the gap in transportation needs. Atlantic City, the only city in America that does not have a taxpayer-supported transit system, provides a glimpse of what such private transit service would look like.

The taxpayer-funded New Jersey Transit system provides rail and bus services connecting Atlantic City with Manhattan, Philadelphia, and other cities in New Jersey. But within Atlantic City, bus services are provided by the Atlantic City Jitney Association. Each "jitney" is a small bus, individually owned by its driver, that follows one of several fixed routes. Fares are low, service is frequent, and the jitneys operate 24 hours a day.

Although the Kansas City urban area has six times as many people as the Atlantic City region, the Atlantic City Jitney Association operates close to half as many buses as KCATA (190 vs. 423). Of course, as a resort city, Atlantic City is a somewhat unusual case, but there is no reason why the jitney model could not be applied to other cities.

One way to promote the jitney model would be to use the taxpayer dollars that now support transit agencies to instead provide transit vouchers to low-income people and others who do not have access to automobiles. People could use these vouchers for jitneys, taxicabs, Amtrak, the airlines, or any other public conveyance. Unfortunately, since no other U.S. city uses the jitney model, it is difficult to predict what its effects would be on transit service and transit riders.

CONCLUSIONS

Kansas City does not need light rail to be a "world-class city." It does not need to spend hundreds of millions (or billions) of dollars on an expensive transit system in order to be "hip" or "cool." Nor does it need to worry about "falling behind its peer cities" because it does not have an expensive rail system.

Kansas City does need to worry about providing cost-effective transit service to those who want and need it. Rail transit is not that service. Kansas City does need to worry about keeping its tax burden low so it can compete with its peer cities. Rail transit, on the other hand, requires huge tax subsidies. Kansas City also needs to worry about finding cost-effective solutions to traffic congestion. Rail transit is not one of those solutions, and in fact is more likely to worsen congestion than solve it.

NOTES

1. **Thompson, Gregory L. "Defining an Alternative Future: Birth of the Light Rail Movement in North America," in Transportation Research Board, *Ninth National Light Rail Transit Conference* (Washington, DC: US DOT, 2004), p. 26.**
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