WORKING PAPER

Review of Greenlight Pinellas

Randal O'Toole

Senior Fellow, Cato Institute

August 14, 2014

Review of Greenlight Pinellas

by Randal O'Toole
Senior Fellow, Cato Institute

Executive Summary

Under its "Greenlight Pinellas" proposal, the Pinellas Suncoast Transit Authority (PSTA), which serves Pinellas County, FL, wants to switch its major funding source from a property tax to a sales tax at a rate that will more than double its local tax revenues, and use the added money to build a 24-mile light-rail line and expand bus service. This proposal is extremely and unnecessarily expensive given that buses can provide a superior service to light rail, carrying more passengers more comfortably to more destinations at a far lower cost.

PSTA has already shown its inability to predict short-term travel patterns. Between 1991 and 2005, it increased bus service by 46 percent yet gained essentially no new riders and actually saw a 17 percent reduction in passenger miles. The result was that average occupancies of PSTA buses, which were already emptier than the national average, fell by 44 percent.

Because of the 2008–09 recession, PSTA was forced to reduce bus service by 5 percent after 2008, yet bus ridership actually grew by nearly 9 percent. PSTA says it needs a tax increase to accommodate the growth in ridership, but as of 2012, PSTA bus occupancies of an average of 8 riders per bus were still well below the national average of nearly 11 riders per bus, showing that PSTA has a lot of room for growth without any increase in service.

PSTA's Greenlight Pinellas proposal effectively asks the public to reward the agency for its failures. PSTA's plan is so expensive and produces so little benefit that, under federal Department of Transportation rules that were in effect until last year, it would not be eligible for federal funding because it is so cost-ineffective.

Compared with bus-rapid transit, the proposed light-rail line would be so costly and attract so few new riders that it would be less expensive to give every new round-trip commuter who was attracted to the light rail a new Toyota Prius every single year for 30 years than to build the light rail. Yet the specific bus-rapid transit alternative that was nominally considered by PSTA is itself phenomenally expensive, costing nearly $50 for every hour of transit riders' time that it would save.

In addition, PSTA has failed to reveal the effects of the proposed light-rail line on traffic congestion. Light rail often increases congestion when it crosses streets and disrupts traffic signal coordination systems. Although Greenlight Pinellas documents indicate that PSTA calculated the effects of light rail on congestion, it did not publish its results, suggesting that it did not want the public to know that it would make congestion worse.

As an alternative to light rail and a tax increase, this paper proposes that PSTA introduce eight new rapid bus routes that would provide better bus service to residents throughout the region. These new routes would be funded by contracting out all PSTA bus routes to private operators, which would save taxpayers at least 31 percent per route and probably more. This way, instead of spending more money on poorer quality transportation, as Greenlight Pinellas proposes, taxpayers will get better transit at no greater cost.

Introduction

The Pinellas Suncoast Transit Authority (PSTA), which operates in the Tampa–St. Petersburg–Clearwater metropolitan area on the west coast of Florida, has a problem. Dependent on local property taxes for more than half of its funding, it saw those tax revenues decline by 17 percent between 2008 and 2011. Although federal stimulus funds made up for most of that decline,

increasing costs forced the agency to reduce bus service by 8 percent in the same period. Despite the decline, transit ridership actually grew by 17 percent in the same years.[1]

Instead of accepting congratulations for carrying more riders at a reduced cost, PSTA sees this as justification for raising taxes and dramatically increasing transit service, including constructing an expensive 24-mile light-rail line from St. Petersburg to Clearwater. It calls this plan "Greenlight Pinellas," but it would be more accurate to call it "Red Ink Pinellas."

Greenlight Pinellas is exactly the wrong prescription for several reasons. First, PSTA's proposal to change from using a property tax to using a sales tax to subsidize its costs does nothing about the volatility of its revenues. Between 2008 and 2011, when property taxes declined by 17 percent, sales taxes collected in Pinellas County declined by 19 percent. If PSTA had been dependent on sales taxes, it would have been in an even more precarious financial position.[2]

Second, there are few cases where increased transit subsidies have led to proportional increases in transit ridership. Instead, the cost of each additional transit rider tends to be greater than the last, and in some cases more subsidies do not increase ridership at all. Nationally, after adjusting for inflation, transit operating subsidies grew from $1.6 billion in 1970 to $24.0 billion in 2012.[3] Yet per capita transit ridership declined from 49 trips per urban resident in 1970 to 44 trips in 2012.[4]

Third, PSTA's proposal to build a light-rail line reveals a callous disregard for taxpayers and the need to make the most effective use of available resources. Light rail is an expensive, inflexible technology that has not significantly advanced since 1939. PSTA's own analysis shows

---

1. *National Transit Database Historical Data Files* (Washington: Federal Transit Administration, 2014), table TS2.1, "Service data and operating expenses time-series by mode."
2. "Sales Tax by County," Florida Department of Revenue, tinyurl.com/nzxe7ln.
3. *2012 Public Transportation Fact Book, Appendix A: Historical Tables* (Washington: American Public Transportation Association, 2013), tables 49 and 68.
4. Ibid, table 1; 1970 urban population from "Urban and Rural Population, 1900–1990," Census Bureau, tinyurl.com/njznzmf; 2012 urban population from *2012 American Community Survey*, Census Bureau.

that it is little better than half as cost-effective as an alternative bus-rapid transit plan that itself is unnecessarily expensive.

Building a light-rail line to anchor Pinellas County's bus system is like building a standard wood-frame house but making the walls, ceiling, and floors of the hallway out of solid gold. The hallway would end up costing far more than the rest of the home combined, without providing any additional functionality except to serve the ego of the homeowner. To make this metaphor perfect, we would have to assume that taxpayers paid for the cost of the golden hallway, allowing the homeowner to have an inflated ego at other peoples' expense.

PSTA's own analysis shows that light rail costs more to build and operate than buses. This paper will show that buses are capable of carrying more people in greater comfort. Buses are also far more flexible, being capable of reaching almost any destination in the region instead of the limited areas reached by rails. For all those reasons, PSTA should rewrite Greenlight Pinellas from scratch. This paper offers an alternative that improves transit without a tax increase.

Pinellas Transit

The Census Bureau estimates that about 921,000 people lived in Pinellas County in 2012.[5] Nearly 407,000 of them had jobs, with close to 24,000 of them working at home, meaning about 383,000 people commuted to work. Of those, barely more than 6,000, or about 1.6 percent, relied on transit to get to work.[6]

More than 14,000 commuters reported living in households that had no vehicles available. Curiously, nearly 6,000 of them, or 41 percent, drove alone to work, presumably in borrowed cars or cars provided by their employers, and another 1,800 carpooled. Only 2,127 took transit to work.[7]

5. *2012 American Community Survey*, table S0101 for Pinellas County.
6. Ibid, table B08301 for Pinellas County.
7. Ibid, table B08141 for Pinellas County.

Transit clearly plays an insignificant role in the lives of most Pinellas County residents, and it does not even play a major role in the lives of most residents whose households lack automobiles.

One measure of transit productivity is vehicle occupancy rates. The average Pinellas transit bus has 38 seats.[8] Not all of those seats can be filled at all times: during rush hour, for example, a bus that brings people from the suburbs to a major job center will be nearly empty at the beginning of its route and fill up as it approaches the job center. In order to keep a steady supply of buses moving toward the job center, some buses must go in the reverse direction and will tend to carry fewer riders. Buses are likely to carry even fewer riders during non-rush hours.

In 1991, the average number of people aboard a PSTA bus (calculated by dividing passenger miles by vehicle revenue miles) was 10.1. That was 14 percent below the national average of 11.7, indicating that PSTA was less successful at attracting riders than other agencies.[9]

Between 1991 and 2005, PSTA increased the number of miles of bus service by 46 percent. Despite that, PSTA bus ridership was virtually stagnant, hovering around 10 million trips per year despite a growing population, while passenger miles of transit travel actually declined by 17 percent. The average number of occupants on a PSTA bus fell to just 5.7. Since 2005, the surge in bus ridership has pushed the average number of occupants to 8.0, a considerable improvement but still nearly a third below the 1991 national average of 11.7. (The national average has since fallen to 10.9, partly because other agencies, like PSTA, are failing to operate their bus systems efficiently.)[10]

Even 11.7 is an inadequate benchmark. In 1983, the earliest year for which data are available, the average occupancy of American transit buses was 13.8.[11] It may have been even higher in earlier years.

---

8. *2012 National Transit Database* (Washington: Federal Transit Administration, 2013), "Revenue Vehicle Inventory" spreadsheet.
9. *National Transit Database Historical Data Files*, table TS2.1.
10. *National Transit Database Historical Data Files*, table TS2.1.
11. *National Transit Database 1983*, spreadsheet 516083.

This means that PSTA is misleading voters when it argues that it can only meet growing transit ridership with more taxes. In fact, the existing bus system has a considerable amount of surplus capacity.

"There are very few transportation choices in Pinellas County besides the automobile," argues PSTA. "The future must include a variety of transportation options that work together seamlessly."

Yet there are choices available. More Pinellas County workers walk to work than take transit, and this is true even for workers in households with no vehicle. Nearly as many workers bicycle to work as take transit. More than four times as many Pinellas County residents work at home than take transit.

Despite those choices, well over 90 percent of Pinellas County workers, including more than half of workers in households with no vehicle, commute by automobile. Rather than indicate a lack of choices, this shows how practical, economical, and convenient cars really are.

The notion that Pinellas residents must have one more choice—rail in addition to car, bicycle, bus, and foot—implies that anyone should be able to choose any transportation mode at all and expect taxpayers to subsidize it for them. What if someone chooses to get to work by helicopter? What if someone wants to go to the shopping mall by dirigible? What if someone decides to go to church by being shot from a cannon? Should taxpayers subsidize those choices?

PSTA's plan to spend huge amounts of money increasing transit service will not significantly change the automobile's dominance. Atlanta and San Diego have both invested heavily in their transit systems, yet more than 93 percent of Atlanta-area commuters and more than 92 percent of San Diego-area commuters drive to work. Those numbers are not significantly changed from before the regions began spending heavily on transit.

In fact, transit's share of commuting often declines in regions that spend heavily on rail transit because rail is so expensive that transit agencies are forced to neglect their bus systems. Transit's share of travel in Atlanta was 11.0 percent in 1970 before it began building its rail

system. San Diego's was 4.9 percent in 1980 before it opened its first light-rail line. Transit's share in the Portland, OR urban area was 9.9 percent in 1980; today, after opening five light-rail lines, a commuter-rail line, and a streetcar line, it is down to 7.4 percent.[12]

Thus, PSTA's implicit assumption that spending more money on transit will necessarily mean more riders is not necessarily valid. Even if it were, PSTA's plan calls for expensive projects whose costs per new rider will be very high. PSTA could make other low-cost improvements that would not require a tax increase, but that could attract nearly as many, if not more, new riders than the proposed plan.

The Cost of Greenlight Pinellas

PSTA's plan proposes to increase regular bus service by 70 percent, raising operating costs from $57.5 to $97.5 million per year. In addition, the plan calls for a "premium transit service" between Clearwater and St. Petersburg. If this premium transit service used buses, it would cost $12.4 million per year, bringing the total operating cost to $109.9 million per year.[13]

Rather than use buses, however, PSTA proposes to build a 24-mile light-rail line from Clearwater to St. Petersburg. Operating this line is expected to cost well over twice as much as the equivalent bus, or $29.3 million per year.[14] This means total operating costs would be 120 percent more than current.

The increase in operating costs appears insignificant compared to the capital cost of the proposed light-rail line. PSTA currently estimates this line will cost between $1.54 billion and $1.71 billion. Those estimates are in 2011 dollars; adjusting for inflation to today's dollars would increase them by at least 5 percent, or about $1.6 billion to $1.8 billion. Since the project will not be completed until 2024, the final nominal cost likely will be well over $2 billion.

---

12. Data from 1970 and 1980 from decennial census for urbanized areas. Data from 2012 from American Community Survey, table B08301 for urbanized areas.
13. *Pinellas Alternatives Analysis Final Report*, PSTA, 2012, p. 85.

This cost does not count interest on the nearly $1 billion in loans called for by the Greenlight financial plan. Most of those loans will be for 35 years through the Transportation Infrastructure Finance and Innovation Act (TIFIA). The current rate on TIFIA loans is about 3.4 percent, which would make the interest about $690 million.[15]

It is difficult to convey just what a staggering amount of money $1.6 billion is. A stack of 1,000 one-dollar bills is about 4.3 inches high; a stack of 1.6 billion one-dollar bills would be more than 100 miles high. Instead of spending $1.6 billion on a single light-rail line, PSTA could replace its entire bus fleet with 80-seat, double-decker buses equipped with free Wi-Fi and power ports at every seat and buy enough additional double-decker buses to increase service by 70 percent and operate the Clearwater-to-St. Petersburg premium transit corridor. This would only cost about $268 million.[16]

For another $256 million, PSTA could install elevated platforms at all 5,115 bus stops that it serves,[17] allowing rapid loading and unloading of buses. Each platform would have turnstiles requiring people to pay to enter the platform, avoiding the time-consuming process of paying when boarding the bus as well as the fare evasion that typically plagues the honor system of payment used for most light-rail lines. The platforms could be accessed by wheelchair ramps so disabled passengers could quickly get on and off the buses.

Pinellas County could spend some of the remaining money to install cutting-edge traffic signal coordination systems in all of its 801 signalized intersections. Those traffic signal systems would save travelers millions of dollars in gasoline and time per year; Pinellas County has

---

14. Ibid.
15. "TIFIA," Federal Highway Administration, http://www.fhwa.dot.gov/ipd/tifia/, accessed July 21, 2014.
16. In early 2014, Megabus bought buses similar to those described here for $750,000 apiece. "New Coaches for Megabus.com," *BusandCoach.com*, January 27, 2014, tinyurl.com/oh32xtn.
17. Number of bus stops from psta.net. For another bus-rapid transit project, such platforms were estimated to cost $40,000 each. For this study, a cost of $50,000 was presumed. "Silver Line BRT Cost Estimate Report," Wilbur Smith Associates, 2011, appendix D.

installed such systems on a few intersections but there are still many hundreds to go. This would cost about $100 million.[18]

This would still leave enough money left over to give every area household that is living below the poverty line a brand new car.[19] Numerous studies have found that owning a car will do more to help people out of poverty than just about anything else, including a high school diploma or a free transit pass. Finally, there would still be enough money left over to give every school-age child in Pinellas County a free iPad.[20]

I am not saying all of those things should be done; later in this report I will propose a transit plan that accomplishes most if not all of the objectives of Greenlight Pinellas without requiring a tax increase or putting PSTA in debt. The point is that spending $1.6 billion on a single light-rail line for a few transit riders means forgoing a lot of other things, whether those things are purchased by individuals or government agencies.

Capital Replacement

In addition to interest, another cost that is ignored in all Greenlight Pinellas planning documents is capital replacement. Light-rail tracks, power facilities, stations, and safety signaling systems all wear out and need to be replaced after about 30 years. The cost of this replacement is nearly as great, and can be greater, than the original construction cost.

Greenlight Pinellas' financial plans look ahead only to 2050, when the planned light-rail line would be 26 years old.[21] Those plans include the cost of replacing railcars, which wear out after

---

18. Pinellas County has a master plan for installing advanced traffic management systems that has been partially implemented and is expected to have a total cost of $95 million. *Pinellas County Intelligent Transportation Systems Advanced Traffic Management Systems Master Plan Report*, 2009, p. 171.
19. According to table S1701 of the *2012 American Community Survey*, 13.7 percent of Pinellas County residents live below the poverty line. According to table B25002, there are about 405,000 households in the county. If the size of households below the poverty line is the same as the countywide average, there are about 69,000 households below the poverty line.
20. According to table S0101 of the *2012 American Community Survey*, Pinellas County has about 135,000 children between ages 5 and 19.
21. *Greenlight Pinellas Preliminary Financial Feasibility Analysis*, EY, 2013, p. 5.

about 25 years, but not any infrastructure with longer lifespans. This allows PSTA to avoid revealing to the public that not only will taxpayers be required to pay for the original construction, but they will get to pay for it all over again in 2054.

Few transit agencies take this cost into consideration. As a result, America's rail transit systems that are older than 30 years old are suffering from a serious lack of maintenance. In 2010, the Federal Transit Administration (FTA) estimated that rail transit systems in the United States faced a $59 billion maintenance backlog, and the backlog was growing faster than it was being fixed.[22]

As of 2000, the Washington, DC Metrorail system had cost $8.8 billion to build (about $18 billion after adjusting for inflation).[23] In 2002, the agency announced that it needed $12.2 billion to rehabilitate older portions of the system, the oldest of which were just 26 years old.[24] None of that money was available, leading system officials to defer the work, which in turn has resulted in frequent breakdowns and service disruptions.[25]

Metrorail's problems came to a head in 2009 when lack of maintenance led to a failure of signaling systems and a moving train collided with a stationary train, killing nine people. Although each Metrorail train has an operator, the trains were actually computer controlled; the operator's main job was to open and close the doors and start the train when the doors were closed. The computers determined train speeds, stopped them in stations, and prevented collisions. After the accident, Metrorail managers announced that signals were malfunctioning throughout the rail system. Since then, trains have been driven without computer assistance,

22. "National State of Good Repair Assessment," Federal Transit Administration, 2010, p. 19, tinyurl.com/3yws53z.
23. "Washington, DC Metrorail Construction," Federal Transit Administration, Washington, DC, 2001, fta.dot.gov/grants_1268.html.
24. ''America's Transit System Stands at the Precipice of a Fiscal and Service Crisis,'' Washington Metropolitan Area Transit Authority, 2004, p. 1.
25. Lyndsey Layton and Jo Becker, ''Efforts to Repair Aging System Compound Metro's Problems,'' *Washington Post*, June 5, 2005, tinyurl.com/98e2n; Lena H. Sun and Joe Holley, ''Aging Equipment Blamed in Metro Incidents,'' *Washington Post*, August 28, 2007, tinyurl.com/2sm269.

forcing a reduction in frequencies and less comfortable rides as operators inexpertly apply brakes to stop trains in stations.[26]

The Washington Metrorail system is not the only rail system in the United States suffering from a lack of maintenance. The Chicago Transit Authority system is "on the verge of collapse" and trains in some parts of the system must slow to less than 10 kilometers per hour for safety reasons.[27] A recent crash of a Chicago train at O'Hare Airport resulted when the operator fell asleep, but officials added that at least two backup systems that should have stopped the train without an operator also failed.[28]

Boston's transit agency "can't even pay for repairs that are vital to public safety," says a report that was commissioned by the Massachusetts governor's office in 2009. Moreover, the maintenance backlog was growing because the system was deteriorating faster than the agency's maintenance budget could repair it.[29]

Such maintenance shortfalls are almost guaranteed in a transport system that is not funded entirely by user fees. Politicians love to support grandiose capital projects, especially if they can get someone else to fund them. That allows the politicians to bask in glory when the projects open for business. But they routinely underfund maintenance, as there is little political benefit in replacing a worn-out rail, brake shoe, or electrical signal, while accidents, delays, and other problems can always be blamed on someone else.

Comparing Costs of Rail and Bus

The PSTA examined only one alternative to light rail in detail: a bus-rapid transit line that would require lanes dedicated exclusively to the buses. While this would cost "only" about $1 billion

26. Lena H. Sun and Lyndsey Layton, "Metro Discovers Problems In Additional Track Circuits," *Washington Post*, July 22, 2009, tinyurl.com/pjb3orv.
27. "Chicago Rail System on Verge of Collapse," *Engineering News Record*, November 21, 2007.
28. Ben Brumfield, "O'Hare Train Crash: Driver Fell Asleep, System Failed, NTSB Says," CNN, March 27, 2014, tinyurl.com/kl23fr4.

instead of $1.6 billion for light rail, it is still far more expensive than necessary for a bus-rapid transit system.

The plan calls for running one bus on each dedicated lane every 7.5 minutes during rush hour and every 10–20 minutes the rest of the day.[30] While other buses might use the lanes for a portion of their routes, the lanes would be nearly empty even at the busiest times of the day. (This is the same schedule planned for the light rail, meaning the light-rail tracks would be similarly empty most of the time.) It makes no sense to dedicate all this land and infrastructure to a few transit riders.

Dedicating exclusive lanes (or rails) to transit is supposedly needed to allow transit riders to avoid the congestion faced by auto users. But there is no particular reason why transit riders are morally entitled to this privilege. As will be shown below, transit is not only far more costly than driving, it is no more environmentally friendly than autos. Attracting people out of their cars and onto transit effectively means taking people from a low-cost form of transportation and putting them on a high-cost form of transportation.

As an alternative to dedicated bus lanes (or rails), PSTA could operate a bus-rapid transit line on existing streets shared with autos and trucks. Such a bus system would still have a dramatic speed advantage over ordinary buses because rapid transit buses would stop less frequently than ordinary buses. Adding the bus platforms with a turnstile payment system, as described earlier in this report, would speed the buses still further.

Kansas City has three bus-rapid transit lines that share streets with other vehicles. Some of the lines have bus-only lanes made from former parking lanes for part of their routes, but the rest of the routes share lanes with cars and trucks. The city experienced a 30–50 percent increase in ridership on those lines, which is more than what has been gained from the construction of many light-rail lines.

---

29. “Don’t Let MBTA Go off the Rails,” *Boston Globe*, November 8, 2009, tinyurl.com/ye39jmg.
30. *Pinellas Alternatives Analysis, Final Report*, 2012, p. 84.

The cost of shared-lane bus-rapid transit is little more than the cost of buses and bus shelters or platforms. The buses and shelters are painted in a special design to distinguish them from other buses and bus stops in the Kansas City system. No new taxes were required to start the lines, and just three years were required from the start of planning to the opening day of operation.[31]

In support of its light-rail plan, PSTA cites a study that found $4 in returns for every dollar spent on transit. It is ridiculous to think that an expensive rail project that carries few if any more passengers than a less-expensive bus project will produce greater returns. The returns come from the transportation provided, not the dollars spent, so the goal should be to spend the least amount of dollars, not the most, to get the same benefit. This is known as *cost-effectiveness*.

Cost-Effectiveness

The law authorizing federal support for new rail transit projects requires, among other things, that the projects be cost-effective. Since the law was first written in 1991, the FTA has interpreted "cost-effective" in several different ways, including cost per new rider, cost per hour of user benefit, and most recently cost per rider. However, none of the FTA interpretations have gotten to the heart of cost-effectiveness, which is that a project must be the least-cost way of producing a given level of benefits (or, alternatively, produce the most benefits per dollar).

In this way, cost-effectiveness differs from simple efficiency, which merely requires that a project's benefits must be greater than its costs. Not everything can be measured in dollars, so cost-effectiveness is used to evaluate the cost of non-monetary benefits. If the benefit is, for example, getting a new rider onto transit, then to show that a particular project is cost-effective, a full range of alternatives must be considered with estimates of the costs and the number of new riders resulting from each alternative.

31. "Kansas City BRT," Regional Transit System, tinyurl.com/ojz4tjp.

Instead of requiring transit proposals to examine a full range of alternatives, the FTA until recently only required two: no action and "transportation system management," which basically means modest improvements in current bus service. By not requiring the study of more alternatives, the FTA has allowed transit agencies to propose projects without revealing that they are far from cost-effective.

In 2005, the then–secretary of transportation, Mary Peters, grew frustrated with this process and decided to place a limit on wasteful projects. Measuring cost-effectiveness in terms of cost per hour of time saved by a project, Peters decreed that any project that cost more than about $25 per hour would not be eligible for federal funding. Congress immediately overrode this rule for several particularly wasteful projects, including Bay Area Rapid Transit from Fremont to San Jose, CA, the San Francisco Central Subway, the Washington, DC Metro Silver Line, and the Portland, OR Wilsonville-to-Beaverton commuter train. Transit agencies with other projects, however, scrambled to revise their projections to get the estimated cost below $25 per hour or, if the cost was too much higher, withdrew their applications.

Peters' $25 per hour threshold still did not assure cost-effectiveness, as the benefits of a rail project that cost, say, $20 per hour could probably be achieved just as well by a bus project that cost only $6 per hour. But the rule did stop some especially wasteful projects, such as a proposed Red commuter-rail line in Charlotte, NC.

The transit industry hated the $25 per hour threshold, so when President Obama was elected, the FTA revised the rule again, eliminating any threshold and, what is more, no longer requiring that any alternatives be considered when measuring cost-effectiveness, which effectively means cost-effectiveness will not be measured.

Even when the Peters rule was in effect, the FTA did little to enforce it. One part of the rule required that, when measuring hours of time saved by the project, the time of all travelers—not just transit riders—should be considered equally. Many transit agencies proposed projects that

would dramatically increase traffic congestion and then counted only the time saved by transit riders when measuring cost-effectiveness—and the FTA accepted the calculations.

For example, the environmental impact statement for the Maryland Purple line of the DC Metro system calculated that the proposed light-rail line would cost about $23 per hour of time saved. The fact that this was more than the $19 cost of bus-rapid transit was ignored because nothing in the rules required that bus-rapid transit be considered as an alternative. But even the $23 per hour only counts the cost per hour saved by transit riders. What was ignored is that the Purple line will cause far more congestion than will be relieved by the few cars it takes off the road. The traffic analysis for the line calculates that average highway speeds if the project is not built will be 24.5 mph; building light rail would reduce the average speed to 24.4 mph. This will add millions of hours of delay to the region's auto travelers—hours that should have been subtracted from the hours saved by transit riders.

The alternatives analysis for Greenlight Pinellas was written when the Peters rule was in effect, so it includes a cost-effectiveness calculation for both the bus-rapid transit and light-rail alternatives. Relative to the transportation system management alternative (TSM), the bus-rapid transit alternative was estimated to cost $49.26 per hour of travel time saved, while the light-rail alternative was estimated to cost $86.84 per hour.[32] Both of those are obviously greater than the $25 threshold, meaning that under the old rules the Pinellas light-rail project would not be eligible for federal funding.

The analysis does not say so, but relative to the bus-rapid transit alternative, light rail has a cost of $232.54 per hour of time saved (see Table 1). It seems unlikely that many Pinellas residents consider their time to be so valuable that they would ask their fellow taxpayers to spend more than $232 to save them one hour.

32. *Pinellas Alternatives Analysis: Detailed Alternatives and Evaluation Technical Memorandum*, PSTA, 2012, p. 50.

Table 1
Calculation of Greenlight Pinellas Cost Per Hour and Per New Trip
(capital costs, operating costs, hours saved, and new trips in millions)

	TSM	BRT	LRT	BRT–TSM	LRT–TSM	LRT–BRT
Annualized Capital Cost	$28.0	$83.0	$134.0	$55.0	$106.0	$51.0
Operating Cost	11.6	12.4	29.3	0.8	17.7	16.9
Total Annual Cost	$39.6	$95.4	$163.3	$55.8	$123.7	$67.9
Hours of Time Saved	n/a	1.132	1.424	1.132	1.424	0.292
New Trips	8.594	11.903	13.097	3.309	4.503	1.194
Cost per hour				$49.26	$86.84	$232.53
Cost per new trip	$4.61			$16.86	$27.47	$56.87

Note: The FTA's cost-effectiveness formulae divide the incremental annual costs of each improvement—in this case, TSM (transportation system management), BRT (bus-rapid transit) or LRT (light-rail transit)—by the incremental number of hours saved or new trips resulting from that improvement. The TSM, BRT, and LRT columns show the costs and benefits of each alternative; TSM also shows the incremental costs and benefits of TSM over no action; BRT–TSM shows the incremental costs and benefits of BRT over TSM; LRT–TSM shows the incremental costs and benefits of LRT over TSM; and LRT–BRT shows the incremental costs and benefits of LRT over BRT. Numbers may not precisely calculate as shown due to rounding.

Source: Pinellas Alternatives Analysis: Detailed Alternatives and Evaluation Technical Memorandum, pp. 25, 50.

What is more, like the Purple line, the Pinellas alternatives analysis did the calculations wrong, counting only the time saved by transit riders. PSTA has not published a traffic analysis showing whether light rail will relieve or add to congestion. While it is remotely possible that it will relieve congestion, it is unlikely because most of the route requires that light-rail trains cross 41 streets, increasing congestion at each of those intersections. At streets with traffic signals, the light rail will likely be given priority over other traffic. If those traffic signals are already coordinated with nearby signals, the rail will disrupt that coordination and add to congestion. For example, when Minneapolis opened its Hiawatha light-rail line, it so disrupted traffic signals that auto travelers in the corridor saw an extra 20 to 40 minutes added to their trips.[33]

PSTA's failure to estimate the effects of its plans on congestion represents a gaping hole in its analysis. Interestingly, the alternatives analysis did report congestion for the no-build alternative, but none of the others. This suggests that PSTA may have calculated congestion for

33. Laurie Blake, "Light Rail Will Always Slow the Flow," *Minneapolis Star-Tribune*, December 12, 2004.

the other alternatives but did not report it because it would be detrimental to public approval. Certainly, if PSTA had calculated congestion levels for the alternatives and found that light rail reduced congestion, it would have included that in the calculation of cost-effectiveness, which would then have been much less than $86.84 per hour.

The analysis also did not calculate the cost per new trip—that is, the cost of getting one person to ride transit when he otherwise would have used some other mode of travel or not traveled at all. However, this can be calculated from estimates of new transit trips made for the alternatives analysis.[34] Based on those estimates, the cost of getting one new trip under the transportation system management alternative is $4.60. Relative to TSM, the bus-rapid transit alternative costs $16.86 per new ride, while the light-rail alternative costs $27.47 per new ride. Relative to bus-rapid transit, light rail costs $56.87 per new ride. It seems unlikely that anyone in Pinellas County seriously believes it is worth more than $50 to get one more person to take one transit trip.

At $56.87 per trip, the annual cost of getting someone to commute by transit, assuming 225 transit round trips per year, is nearly $25,600. At this rate, it would be less expensive to buy every new transit commuter a new Toyota Prius every single year for the next 30 years than to build light rail.

Bus and Light-Rail Capacities

Rail advocates often call light rail "high-capacity transit." This is false. The term "light" in light rail refers to capacity, not weight. The rails generally weigh the same as the rails used in heavy-rail systems and light-rail cars actually weigh more than heavy-rail cars. Instead, light rail is short for *light-capacity rail*. Because light-rail trains often operate in streets, they can be no longer than

34. *Pinellas Alternatives Analysis: Detailed Alternatives and Evaluation Technical Memorandum*, p. 25.

a city block or they would block traffic whenever they stopped. In most cities, that limits them to three-car trains, while heavy-rail trains are typically as long as eight to 11 cars.

A single light-rail car holds more people than a standard 40-foot bus: about 70 seats (vs. 40 in a standard 40-foot bus) and room for another 80 or so standing (vs. about 20 in a bus). For safety reasons, however, most light-rail lines can support no more than about 20 trains per hour. Twenty three-car trains, each car packed with 150 people, can move about 9,000 people per hour.

Buses can move more people than light rail because buses can operate much more frequently. A single bus stop can serve more than 40 buses per hour. Portland, OR has staggered bus stops in its downtown area so there are four stops every two blocks, enabling the transit agency to run 160 buses per hour. If each of the buses holds 65 passengers, they can move 10,400 people per hour.

If that is not enough, double-decker buses have 80 seats and room for an additional 25–40 people standing. With a footprint no larger than a standard bus, these buses cost less per seat than either standard or 60-foot articulated buses that typically have just 60 seats. If packed with 120 people each, double-decker buses can move more than 19,000 people per hour, far more than any light-rail line.

PSTA claims that "once light rail tracks are built, adding more capacity is as simple as adding cars to the train or operating more frequent service. As a result, light rail has the flexibility to add capacity as needed."[35] This is highly misleading because the cost of the light-rail tracks is hardly trivial; the cost of extending those tracks is similarly expensive; and adding more light-rail cars, at an average cost of about $4 million per car, is itself very expensive.

In contrast, the cost of buses is about the same per passenger at almost any level of demand. On low-demand routes or times of day, buses can operate once per hour. On very high demand routes or times of day, buses can operate up to 160 times per hour. Because they can share infrastructure with other vehicles, the costs of that infrastructure is very low and the buses themselves typically cost about $400,000 for a single-decker and $750,000 for a double-decker.

Though the buses are not expected to last as long as railcars—about a dozen years as opposed to 25 years—the annual cost per seat is still far lower.

Moreover, unlike rail, buses are capable of branching off into dozens of different routes. If a rail line operates at its capacity of 20 trains per hour and the line branches, each branch can only have 10 trains per hour. If one of the lines branches again, each branch can only have five trains per hour. If a high-use bus corridor serves 160 buses per hour, the buses can branch into 16 different routes and each route can still have 10 buses per hour. This means that more people can go from their origin to their destination without having to change from a bus to a train or a train to a bus.

Note also that about two-thirds of the passengers on a full bus are comfortably seated: 40 out of 60 on a single-decker bus; 80 out of 120 on a double-decker bus. Most passengers on a full light-rail car—80 out of 150—must cling desperately to a strap as the car lurches to starts and stops.

In short, a carefully designed bus-rapid transit line that shares streets with other vehicles can operate as fast or nearly as fast as light rail, can carry far more people more comfortably than light rail, can operate more frequently than light rail, and all at a cost measured in millions rather than billions of dollars.

The Risk of Rail

Planning, building, and operating rail transit is a far more difficult task than running a bus system. Buses are cheap and flexible. To decide where to run buses, you only have to look outside to see where people are going. When travel patterns change, bus routes can be changed overnight. No one running a bus system needs to be able to see very far into the future.

---

35. *Pinellas Alternatives Analysis Summary Report*, PSTA, 2012, p. 15.

In contrast, rails are expensive, inflexible, and take years to plan and build. Planning a rail line requires an ability to predict future construction costs, future operating costs, and future travel demand. No one can accurately predict these things, which is why so many rail projects cost far more and carry far fewer people than their original projections.

Several studies have found that rail construction ends up costing an average of 40 percent more than the original projections.[36] Ridership is also often overestimated. These over- and under-estimates are so systematic that planning professor Bent Flyvbjerg calls them "strategic misrepresentations" and argues that transit agencies should automatically increase their cost estimates by 40 percent and reduce their ridership estimates to take this into account.[37]

Instead, transit agencies have developed a different strategy. First, they estimate low costs and high ridership. After gaining approval for their projects, they re-estimate the costs and ridership, increasing the costs and reducing ridership forecasts. When the projects are completed, they often cost slightly less than the revised estimates (but much more than the original estimates), allowing the agencies to say they complete the projects under budget.

For example, when Denver's Regional Transit District gained approval to build its West light-rail line, the projected cost was $250 million and the line was supposed to carry 29,100 people per weekday in its first year. After construction began, this cost was revised upward to $709 million and ridership projections were cut back to 18,300 people per day. The final cost was $707 million, so the agency bragged that it completed the project under budget. Actual ridership has been about 14,000 people per day.[38]

---

36. See, for example, Don Pickrell, "Urban Rail Transit Projects: Forecast Versus Actual Ridership and Costs," Transportation Systems Center, U.S. Department of Transportation, Cambridge, MA, 1989, p. xv; Nasiru A. Dantata, Ali Touran, and Donald C. Schneck, "Trends in U.S. Rail Transit Project Cost Overrun," paper presented to the Transportation Research Board, 2006, table 2, tinyurl.com/34g9rd; and "Contractor Performance Assessment Report," Federal Transit Administration, 2007, table 2.
37. Bent Flyvbjerg, "From Nobel Prize to Planning Practice: Reference Class Forecasting as a Tool to Tackle Optimism Bias and Strategic Misrepresentation in Policy and Planning," Aalborg University, Denmark, 2006, p. 3.
38. "Projected vs. Actual Ridership," RTD, June 11, 2013, tinyurl.com/l8d3ydf.

Although some people refer to rail transit as "rapid transit," light rail is, in fact, fairly slow, averaging about 22 mph. Greenlight Pinellas estimates that its proposed line will average 25 mph, but this may be overly optimistic. Minneapolis–St. Paul recently opened a new light-rail line that was supposed to average 17 mph; in fact, it averages just 12.5 mph.[39]

To compensate for rail's inflexibility, rail transit agencies have adopted a strategy of trying to increase housing, retail, and office space along the rail lines rather than allow transit to follow changing travel patterns. This is called *transit-oriented development* (TOD) and it is attractive to people who prefer to live in apartments and get around by methods other than driving. However, once this market has been saturated, studies show that people who live in transit-oriented developments are just as likely to drive as other people.

Some regions have approved plans requiring that as much as 80 percent of all new housing be located near rail transit stations.[40] To enforce this, the regions have strict urban-growth boundaries, making it difficult to find vacant land available for construction of single-family homes while they use tax-increment financing to subsidize construction of multifamily housing next to rail stations. The result is that housing becomes unaffordable as the type of housing most people prefer—single-family—becomes scarce and people only reluctantly accept living in multifamily housing. John Charles of the Cascade Policy Institute, for example, has found that people living in most TODs in the Portland, OR area are just as likely to drive to work as people living in the rest of the region.[41]

Greenlight Pinellas naturally includes plans for TODs along the proposed light-rail line. "Economic development has in part been shown to have a correlation with light rail systems,"

39. Frederick Melo, "Green Line Thrown behind Schedule by Traffic Lights," *St. Paul Pioneer Press*, July 20, 2014, tinyurl.com/mak75aw.
40. See, for example, *Draft Plan Bay Area*, Metropolitan Transportation Commission, 2013, p. 26.
41. John Charles, "The Myth of Transit-Oriented Development," presentation to the Preserving the American Dream conference, Washington, DC, October 28, 2013, tinyurl.com/onf7uy6 (100-MB PPT file).

says the Greenlight Pinellas TOD technical memorandum.[42] What the document fails to mention is that most TODs along light-rail lines received millions if not tens of millions of dollars in subsidies. Most of those subsidies come from tax-increment financing, a tax trick in which the property (and sometimes sales) taxes paid by a development are used to subsidize the development rather than to provide the urban services that taxes normally go for. The result is that everyone else in the city or county has to pay higher taxes or accept a lower level of urban services in order to cover the costs of services used by the TOD.

As of March 2014, for example, Portland has borrowed more than $1.3 billion to subsidize TODs along its light-rail and streetcar lines.[43] Those loans will be repaid out of the property taxes paid by property owners in the city's urban renewal districts, all of which straddle a rail transit line. The city uses a variety of other subsidies to attract development along its rail lines, and Portland's suburbs have their own TIF districts as well. The costs of those subsidies show up to residents in the form of increased classroom sizes (because taxes that would otherwise go to schools are going to subsidize development instead), reduced library hours, and other reductions in urban services.

The Pinellas TOD memorandum also fails to note research showing that neither rail transit nor tax-increment financing cause regions to grow faster. Instead, research shows that, at best, all they do is influence the location of new development; development would have happened anyway somewhere in the region.[44]

In fact, by increasing the local tax burden, cities that build rail transit and use tax-increment financing to subsidize development may actually grow more slowly than regions that do not. Nationwide, population growth is negatively correlated with investments in transit; urban areas

---

42. *Pinellas Alternatives Analysis: Transit Oriented Development Technical Memorandum*, PSTA, 2012, p. 26.
43. *Proposed Budget, FY 14–15*, Portland Development Commission, 2014, p. 16.
44. Robert Cervero and Samuel Seskin, *An Evaluation of the Relationship between Transit and Urban Form* (Washington: Transportation Research Board, 1995), p. 3.

that spend more on transit grow more slowly than ones that spend less.[45] Similarly, a study of tax-increment financing in Illinois found that "cities that adopt TIF grow more slowly than those that do not."[46]

Taxpayers in regions that build rail transit are likely to pay two kinds of subsidies: first to build and operate the rail line and second to support development along the line.

Rail Transit vs. Automobiles

Rail advocates often claim that light rail can move as many people as eight freeway lanes.[47] This is another falsehood. It is based on a comparison of heavy-rail trains that are jammed full of people with autos of average occupancy. As previously noted, light rail capacities are much smaller than heavy rail. It is also unfair to compare full trains with autos at average occupancies.

If we compare full light-rail transit with full cars, the results are very different. As previously noted, a light-rail line with three-car trains can move about 9,000 people per hour. A freeway lane can move more than 2,000 cars per hour, and if those cars are full and have an average of five seats per car, the lane moves more than 10,000 people per hour.

The results are also different if we compare light-rail trains of average occupancies with cars at average occupancies. In 2012, the average light-rail car carried 25.4 people.[48] At that rate, a line moving three-car trains every three minutes moves about 1,524 people per hour. By comparison, at average occupancies of more than 1.6 people per car, a freeway lane would move more than 3,200 people per hour, more than twice the light-rail line.

45. Randal O'Toole, "Transit and Urban Growth," *The Antiplanner*, November 6, 2013, ti.org/antiplanner/?p=8412.
46. Richard Dye and David Merriman, "The Effects of Tax Increment Financing on Economic Development," working paper, 1999, http://americandreamcoalition.org/landuse/TIFsinIllinois.pdf.
47. "Why Light Rail? Why Now?" Charlotte Area Transit System, 2003, p. 3.
48. Calculated from *2012 National Transit Database*, "service" spreadsheet.

Rail advocates also argue that, since highways are subsidized, trains should be subsidized as well. While there are some highway subsidies (which, incidentally, I oppose), on a per-passenger-mile basis, they are very small.

If we funded auto driving the way we fund rail transit, your car would be free, even if you chose to own an expensive Tesla. You would pay only about a dollar per gallon for gasoline and would not have to pay any gas taxes to build and maintain roads. You would pay only about half the cost of maintaining your car, and when the car broke down for lack of maintenance, Uncle Sam would waggle the finger bone of shame at you for failing to maintain your car—and then give you a new, upgraded model.

In fact, the cost of driving is much less than claimed by PSTA, while the cost of rail transit is more. In order to claim that transit can save people money, PSTA relies on AAA calculations of how much it costs to buy a car new, pay full financing for the car, and then replace it as soon as it is paid for after five years.[49] In fact, people spend far less by buying used cars and keeping them for longer than five years. The average car on the road is more than 11 years old, which means Americans keep driving cars until they are an average of more than 20 years old.[50]

Quantitatively, Americans spend about a trillion dollars a year buying, maintaining, operating, and insuring automobiles, including the gasoline taxes that pay for most of our roads.[51] We drive our personal automobiles and light trucks more than 2.25 trillion miles a year.[52] Those cars have average occupancy rates of 1.67 people per vehicle.[53] This means we spend about 26 cents per passenger mile on driving.

---

49. *Greenlight Pinellas Plan*, PSTA, 2013, p. 12.
50. Peter Valdes-Dapena, "Average U.S. Car Is 11.4 Years Old, a Record High," CNN Money, August 6, 2013, http://money.cnn.com/2013/08/06/autos/age-of-cars/.
51. *National Economic Accounts* (Washington: Bureau of Economic Analysis, 2008), table 2.5.5.
52. *2012 Highway Statistics* (Washington: Federal Highway Administration, 2014), table VM-1.
53. Adella Santos, Nancy McGuckin, Hikari Nakamoto, Danielle Gray, and Susan Liss, *Summary of Travel Trends: 2009 National Household Transportation Survey* (Washington: Federal Highway Administration, 2011), table 16.

Depending on the state, state highway costs are mostly or entirely covered by gasoline taxes, tolls, and other highway user fees. Most subsidies to highways are at the county and city level, and those subsidies average about $40 billion per year, which is a bit more than a penny per passenger mile.

To make transit appear like a bargain compared with driving, PSTA counts only the fares. But subsidies to transit are much greater than subsidies to driving. In 2012, PSTA spent 74 cents per passenger mile operating its buses and collected only 21 cents per passenger mile in fares. This counts only operating costs. Over the past two decades, PSTA has spent an average of nearly $11 million per year (adjusted for inflation) on bus capital costs, adding another 16 cents per passenger mile, bringing the subsidies to 69 cents per passenger mile. This is about 65 times as much as the subsidy to driving.

Subsidies to light rail would be even greater. On average, in 2012, America's light-rail lines collected fares of 19 cents per passenger mile and cost 64 cents per passenger mile to operate. But over the past two decades, transit agencies have spent an average $2.2 billion per year (adjusted for inflation) on light-rail capital and maintenance costs, which is an average of 95 cents per passenger mile. Thus, subsidies average $1.40 per passenger mile, more than twice the subsidies to PSTA buses and more than 130 times as much as subsidies to driving.

While no light rail in America can be said to be a success, some are less unsuccessful than others. The ones that carry the most riders at the least subsidy tend to be in urban areas that have large numbers of downtown jobs. Portland, OR, for example, has about 80,000 downtown jobs; Minneapolis has 100,000; and Denver 120,000.[54] St. Petersburg, FL, however, has just 30,000 downtown jobs.[55] This makes it likely that per-passenger-mile subsidies to a St. Petersburg light-rail line would be even higher than average.

---

54. Wendell Cox, "United States Central Business Districts (Downtowns)," *Demographia.com*, 3rd Edition, March, 2014, table 2.
55. "Quick Facts," St. Petersburg Downtown Partnership, http://www.stpetepartnership.org/?page=quick

The Greenlight Pinellas plan takes it for granted that getting people out of their cars and onto transit is a good thing that justifies the higher subsidies to transit. People assume that transit uses less energy and produces less pollution and greenhouse gases than driving. In fact, that is not true.

In 2011, the average car on the road used about 3,300 British thermal units (BTUs) of energy per passenger mile, while the average light truck (including SUVs, pickups, and full-sized vans) used about 4,100 BTUs per passenger mile.[56] By comparison, in 2011 PSTA used 4,666 BTUs per passenger mile operating its buses; this rose to nearly 5,000 BTUs per passenger mile in 2012.[57] For gasoline- and diesel-powered vehicles, greenhouse gas emissions are almost exactly proportional to BTUs, so cars emit about 235 grams per passenger mile, light trucks about 290, and PSTU buses 330. In other words, SUVs are greener than PSTA.

Since light rail is powered by electricity, some might think it would be greener than buses or cars. But 90 percent of the electricity generated in Florida comes from burning fossil fuels, so it is ultimately no greener than driving. The Miami heavy-rail line, for example, uses more than 5,000 BTUs of energy per passenger mile and emits more than 300 grams of greenhouse gases.

Moreover, federal standards require that cars become more fuel-efficient over the next decade. By 2025, the average automobile on the road, including light trucks, will use only 2,400 BTUs per passenger mile and emit just 170 grams of greenhouse gases per passenger mile. Meanwhile, if PSTA has its way, Pinellas County will just have opened a light-rail line that will probably use twice as much energy and emit twice as much pollution per passenger mile.

Cars are not only greener than transit, they are rapidly advancing. New cars today can take over some of the driving functions, including steering, controlling speed to maintain safe distances from other vehicles, and parking. At a recent conference on autonomous vehicles, more than 200 experts estimated that cars that will be able to take over driving in almost all situations

56. Stacy C. Davis, Susan W. Diegel, and Robert Boundy, *Transportation Energy Data Book: Edition 32* (Oak Ridge, TN: Department of Energy, 2013), table 2.13. BTUs per vehicle divided by 1.6 for cars and 1.7 for light trucks to get BTUs per passenger mile.

will be on the market by 2020, and by 2030 cars will be available that will not require drivers at any time.[58] The first such cars are already being tested in California by Google, which (defying the experts) says it expects to see mostly driverless cars on the market as early as 2017.[59]

When truly self-driving cars become available, transit will be superfluous because children, the elderly, and the disabled will be able to get into self-driving cars and go where they want. Car sharing is likely to become more popular as people who want to avoid the expense of a car simply call for a self-driving car to come to their door and take them to their destination. It makes no sense for Pinellas County to spend billions of dollars on an obsolete rail system that, thanks to new technology, will be even more obsolete before it opens for business.

Improving Transit without a Tax Increase

Given the available information, it is possible to design transit improvements for Pinellas County that will do more for the region's transit riders without a tax increase or going into debt. The first step is for PSTA to contract out all of its bus routes to private operators. PSTA already contracts out about 4.4 percent of its bus service (measured by vehicle miles) and all of its demand responsive (DART) service.

The portion of the bus service that it contracts out costs just 37 percent as much to operate, per revenue vehicle mile, as the bus service that it operates itself. The buses used by the contractors are a little smaller than the buses PSTA operates (an average of 28 seats vs. 38 seats), but the cost per seat-mile is half that of PSTA-operated buses.

Denver provides a more concrete example of the savings from contracting out. By Colorado law, Denver's Regional Transit District (RTD) must contract out half of its bus service. The buses

---

57. Calculated from *2011 National Transit Database* (Washington: Federal Transit Administration, 2012), "Energy Consumption" and "Service" spreadsheets.
58. Steven Underwood, "Automated Vehicles Forecast: Vehicle Symposium Opinion Survey," 2014, p. 17, goo.gl/zzQYBF.

that are contracted out cost 46 percent as much to operate per vehicle mile as the buses RTD operates itself. Again, the contracted buses are a little smaller, but the cost per seat mile is still 36 percent less.

Contracting out is not anti-union. All of the contractors that operate Denver buses—First Transit, Laidlaw, and Veolia—are unionized, and all of them pay wages roughly similar to those paid by the transit agency itself.[60] Despite the fact that the contractors also pay property and fuel taxes that the transit agency is exempted from, they are still able to save taxpayers money.

Nationwide, buses that are contracted out cost 36 percent less per vehicle revenue mile than buses that are directly operated by transit agencies; on a per-seat-mile basis the savings is 31 percent. If PSTA can save just 31 percent of its operating costs by contracting out the rest of its buses, it will have nearly $16 million per year that it can spend on transit improvements.

The second step of this plan is to use this savings to improve service throughout the county, partly by overlaying several bus-rapid transit routes on top of the existing bus routes. Since these rapid bus routes would share streets with other traffic, annual operating costs would be far lower than for the bus-rapid transit alternative proposed by PSTA.

PSTA currently spends an average of $1.3 million per year per route operating its bus system. Even though the rapid bus routes will be contracted out and should cost less, to be conservative let us assume they will cost $2 million per year per route. That means the savings from contracting out will provide for eight rapid bus routes.

PSTA's analysis of a bus-rapid transit alternative to light rail estimated that a dozen buses would be needed to serve the route. If each rapid bus route requires a dozen double-decker buses with Wi-Fi and other amenities, which cost about $750,000 apiece, that represents a cost of $9 million. In addition, PSTA's premium transit route included 16 bus or rail stops. Let us be

---

59. John Markoff, "Google's Next Phase in Driverless Cars: No Steering Wheel or Brake Pedals," *New York Times*, May 27, 2014, tinyurl.com/p7z2byz.
60. Jeffrey Leib, "Bus Drivers Go All-Union: RTD Contractor Laidlaw Completes Vote under Labor Peace Act," *Denver Post*, April 22, 2008, denverpost.com/ci_9007183.

generous and assume that each rapid bus route of about 24 miles will have 24 stops, each one with a raised platform and a turnstile entrance so people will have paid before they board the bus. Such platforms will cost an estimated $50,000 each, or $1.2 million per route. The total capital cost of each rapid bus route, then, would be about $10.2 million.

To cover the costs of starting all eight of these rapid bus routes, PSTA should apply for a $26 million “Small Starts” grant from the federal government. The Small Starts program offers as much as $75 million to transit agencies starting projects that cost no more than $250 million. Since this project—eight rapid bus routes—will cost about $82 million, it qualifies.

In year one, PSTA can take $10.2 million of the $16 million savings from contracting out bus service and start a rapid bus route. After paying the operating cost of this route, $3.8 million in savings will be left over. PSTA can continue to start one new route a year for three more years before it has to dip into the $26 million Small Starts grant. After eight years, it will have started all eight rapid bus routes at a capital cost of $82 million, $56 million of which will have come from the $16 million annual savings and the rest from the Small Starts grant. By the eighth year, all $16 million of the annual savings will be devoted to operating the rapid bus routes.

Rather than start eight rapid bus routes, PSTA could choose to start fewer rapid bus routes and instead use some of the savings from contracting out to extend the hours of existing bus routes. Either way, for a tiny fraction of the cost of a light-rail line, new rapid bus routes and other service expansions are likely to attract far more new transit riders than a single premium transit route. Some of PSTA’s existing transit routes may be rerouted to feed into the rapid bus routes, allowing transit riders who do not live near one of the rapid bus routes to take advantage of their faster speeds.

This alternative does not include the full 70 percent increase in ordinary bus service proposed by Greenlight Pinellas. However, as noted above, PSTA buses are currently operating well below capacity, carrying an average of just eight passengers on 38-seat buses. If the benchmark is an average of 13.8 passengers per bus, then simply reaching that benchmark would represent a 70

percent increase in ridership. Until PSTA finds routes that attract enough riders to reach that benchmark, any expansions are likely to suffer diminishing returns from extending service to more routes or more hours that attract even fewer riders.

Conclusions

Thanks to the speed, convenience, and economy of auto travel, transit has become nearly irrelevant to most Pinellas County residents. Although PSTA increased transit service by 46 percent between 1991 and 2005, it gained essentially no new riders and passenger miles of transit travel actually declined by 17 percent. Ridership has grown since 2005 despite a small contraction in service offered. This history shows that spending and ridership are not necessarily related and that PSTA's choices in where to expand service have not been successful.

Despite this, PSTA wants county residents to pay for an expensive yet obsolete rail transit line as well as a 70 percent expansion in bus service. Given that PSTA's past spending on transit has been unsuccessful, the agency is effectively asking to be rewarded for is failure.

Instead of raising taxes, it is possible to make several improvements in transit service without new revenues. The key is to contract out bus operations to private operators, which will save taxpayers at least 31 percent—and likely much more—per seat mile. This savings can be used to make improvements that could actually increase transit's usefulness to the community rather than merely increase its costs.