Debunking
Myths of Honolulu Rail Transit

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Summary

The City & County of Honolulu has pursued adding rail transit to the mix of commute options, which currently includes bus, vanpool and ferry in addition to private cars and private bus service. Because of the multi-billion dollar price tag and the 14-year temporary increase to the state's General Excise Tax (GET) to pay for construction costs, the issue has been widely debated. Some ideas have been circulated as (unsubstantiated) facts. These include that: 1) public transportation ridership will increase once the rail system is built, 2) rail consumes less energy than other options, particularly cars, and 3) the carbon footprint of the rail system is substantially smaller than that of other transportation options.

After an extensive literature search, review of reported data and checking of reported data against US Census and Department of Energy databases, we have reached several conclusions. In the great majority of cases where US cities have built and maintained light and heavy rail systems, the public transportation ridership percentage is now lower than before the system was completed. Denver is currently the only city maintaining a slight increase. We also found that heavy rail transit systems generally consume about the same amount of energy per passenger mile as private cars. While heavy and light rail transit technology will change little in the next five years, the rising popularity of hybrid, electric and even air-pressure cars will soon make the average car even more energy efficient and further decrease its estimated CO_2 output.

We also considered the energy necessary to build a new rail transit system, as is proposed in Honolulu. Looking at the Portland light rail system, we found that the energy used in construction was 172 times greater than the estimated annual energy saved by moving commuters from cars to the rail.

Introduction

US public transportation has not kept pace with lifestyle changes over time. Subway/rail systems, for all their bells and whistles, remain very similar to the original 1904 New York City subway. Rail and bus takes longer than private cars and the diminishing popularity of public transportation shows it does not offer the flexibility commuters need.

The US Census Bureau has collected data on the number of workers commuting, their commuting methods and average commuting times since 2005. Data is currently available for 2005, 2006 and 2007 for various metropolitan areas and was used extensively throughout this study.

Prior to 2005, the US Census collected less extensive commuting data for a smaller number of metropolitan areas in its decennial censuses. Data is available for 2000, 1990, 1980, 1970 and 1960 and was used in this study. Notes have been added where definitions varied from year to year.

The US Department of Energy, 2006 Transportation Data Book was the source of most of the energy use data used in the study. As there was no government source for estimating the CO_2 output for forms of transit, we used data from a comprehensive study by the Thoreau Institute, "Rail Energy & CO2: Part 2."

Rail Transit Decreases Public Transportation Ridership

All the cities that built new rail transit systems expected increases in public transportation usage, but the opposite has proven true. Since 1960, only Denver has constructed a rail system that currently holds onto a slight percentage increase. The data is presented in two graphs because the difference between cities makes it impractical to present in one graph. Honolulu is included in both graphs for comparison.

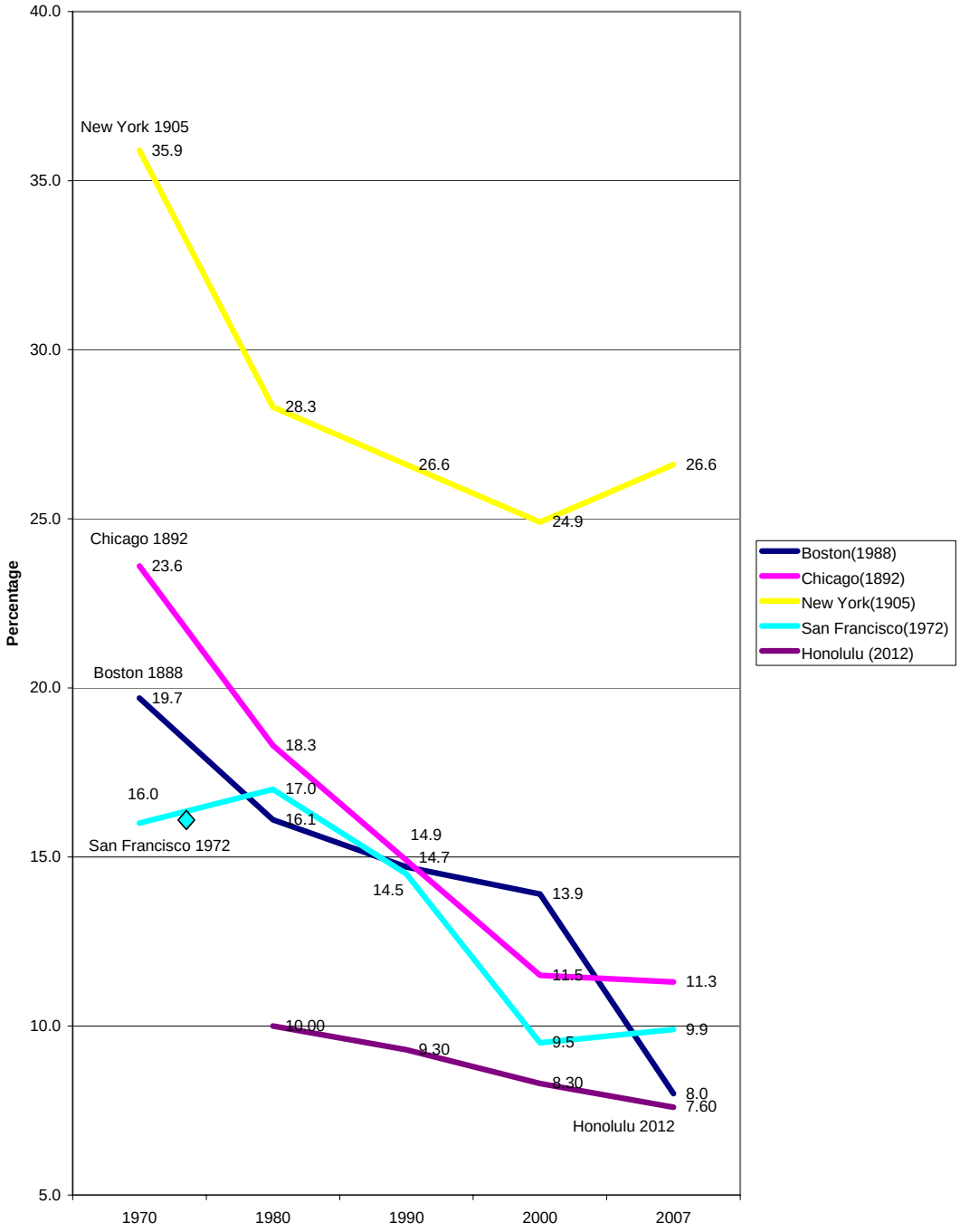
Notes in the legend of each graph as well as a diamond shaped marker on each line indicate when each rail system was built. The New York City, Chicago and Boston systems were built before 1970. Though data for 1960 appears in the table in the Appendix, it is not included in Graph 1 or Graph 2 to reduce graph clutter.

It is easy to see that in all the metropolitan areas shown in the graphs—areas with the highest percentage of public transportation usage—percentages have dropped to levels lower and in most cases much lower than before rail systems existed. The only exceptions are Denver and San Diego. Time will tell if they follow the other cities.

Commuters are not attracted in large numbers to the new state-of-the-art rail stations and trains or at least not for long. Even systems that had an initial increase in ridership are declining now with the exception of Denver.

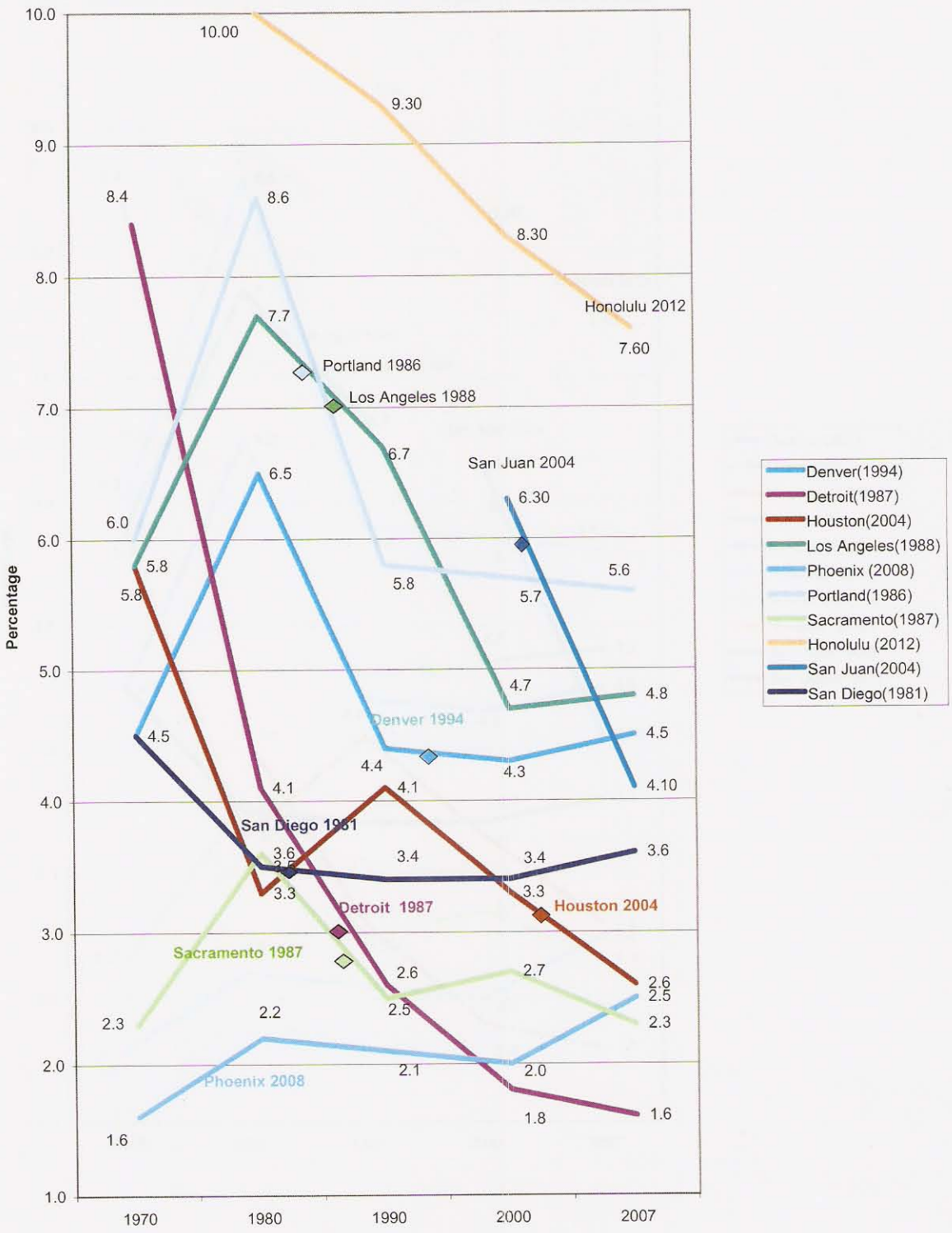
The construction or continuation of heavy or light rail systems does not increase the public transportation share of commuters; it appears to do the opposite. There are a few possible reasons for this, which will be explored in this study.

Graph 1 – Public Transportation Usage by Commuters in Metropolitan Areas with High Public Transportation Usage and Honolulu. (Rail project completion dates noted.)[1]



[1] US Census Bureau, Decennial Census 1960 – 2000 and American Community Survey for 2007 which must be printed out separately for each city, http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&_ts=240267317805&_ds_name=ACS_2006_EST_G00_&_program. Rail system completion dates from various sources.

Graph 2 – Public Transportation Usage by Commuters in Metropolitan Areas with Second Tier Public Transportation Usage and Honolulu. (Rail project completion years noted.)[2]



[2] Ibid.

According to the Honolulu Alternatives Analysis published by city consultant Parsons Brinkerhoff in November 2006, when rail is combined with TheBus, overall mass-transit ridership is projected to be 7.4% of total transit trips in 2030, instead of the 6.1% projected for 2030 if the commuter rail line is not built.[3] From the same table of the report, in 2030, vehicle trips are projected to be 78.2% of all trips in 2030 if the rail system built compared to a projected 79.5% in 2030 if the rail system is not built. The city expects only 1.3% of commuters to be converted from cars to public transportation commuting.

Based on the experience of all twelve high utilization mainland rail transit systems, it is extremely unlikely that there will be any increase in public transportation usage. In fact by 2030, we, like Parson's Brinkerhoff, expect the public transportation usage in Honolulu to fall far below the 7.6% it was in 2007.

Cars Continue to Be King

As reported by the US Census Bureau, New York City had the highest percentage of public transportation usage from 1960 through the present at 44.6 %. It is still the highest today, though currently lower at 26.6%.

Looking at the table below, the percentage of commuters using personal vehicles for commuting has never fallen below 44.6% for any of the 12 cities, plus Honolulu, San Juan, Puerto Rico or for the US as a whole for any year between 1960 and the present.

Table 3—Personal vehicle share in commuting (percent)[4]

City	1960	1970	1980	1990	2000	2007
Boston	62.2	68.2	74.1	77.8	83.6	83.5
Chicago	57.3	68.5	75.5	80.6	82.2	81.5
Denver	80.5	89.1	88.1	91.3	87.8	86.0
Detroit	79.8	87.0	93.1	95.4	93.8	93.4
Houston	83.0	90.6	93.9	93.3	92.3	92.3
Los Angeles	85.2	89.2	88.0	89.3	87.8	87.6
New York City	44.7	55.4	63.6	66.7	66.3	63.4
Phoenix	88.7	93.8	94.6	93.7	91.3	90.1*
Portland	80.8	87.3	86.2	90.3	85.9	84.6
Sacramento	84.9	90.4	90.2	92.7	89.7	89.1
San Diego	84.8	81.0	86.0	90.8	88.2	86.8*
San Francisco	71.4	77.3	77.5	80.0	82.2	79.9
12 metro areas*	75.6	81.9	84.9	87.5	85.9	84.9
Honolulu	n/a	n/a	n/a	78.6	80.8	81.7
San Juan	n/a	n/a	n/a	n/a	86.6	87.8
All US	64.0	77.7	84.1	86.5	87.9	86.5

*****Combined metropolitan figures were used for all cities, except for Phoenix and San Diego where only primary metropolitan figures were available. An expanded version of this chart which includes other forms of commute appears in the Appendix.

[3] Parsons Brinkerhoff, "Alternatives Analysis, Table 3-3 Total Daily Person Trips by Mode", p 3-4, available at http://www.honolulutransit.org/library

[4] US Census Bureau, Decennial Census 1960 – 2000 and American Community Survey for 2007 which must be printed out separately for each city, http://factfinder.census.gov/servlet/DatasetMainPageServlet?_lang=en&_ts=240267317805&_ds_name=ACS_2006_EST_G00_&_program.

Private car commuting increased between 1960 and 1990 and then leveled off. Some metropolitan areas have experienced declines. In the US as a whole, the rate remains the same in 2007 as it was in 1990. As automobiles became more affordable, they became the commuting method of choice and remain so today, with the US average at 86.5%.

In the 1980s during the OPEC-driven high-energy-price years, cities like San Diego, Portland, Detroit, Sacramento and Los Angeles built rail systems to draw riders away from their cars. They failed and were joined soon after by Denver in 1994. The Denver metropolitan area, which had a public transportation usage rate of approximately 4.3% when its rail system opened, has managed to hold on to a 4.5% share in 2007. After the millennium, Houston and San Juan, Puerto Rico followed suit with no better results than the cities that built rail prior to Denver, as US Census figures show. The Phoenix rail is scheduled to open in December 2008, and Honolulu's first phase of heavy rail is forecast to open in 2011 or 2012. Both are virtually the same as the systems that have come before and have little chance of increasing public transportation usage.

Falling public transportation usage rates and steady or rising private car commuting rates following rail system construction mean that the bulk of rail commuters likely come from other public transportation systems—mainly existing bus or ferry service.

Energy Usage

Some of the most interesting ideas and claims arising from the Honolulu rail debate concern the energy usage and environmental impact of rail versus the most popular commute method in Honolulu, the car. This section and the next clarify the debate using statistical data and estimates based on those statistics.

Table 4: Energy usage of various modes of transportation[5]

	Number of vehicles (thousands)	Vehicle Miles (millions)	Passenger Load	Energy per passenger mile (Btu)
Cars	135,399.9	1,682,671	1.57	3,512
Personal Trucks	87,223.1	910,229	1.72	3,944
Motorcycles	6,686.1	12,401	1.2	1,855
Vanpool	6.6	99	6.1	1,322
Buses	83.0	2,498	8.8	4,235
Transit Rail	12.8	715	22.5	2,784
Toyota Prius	n/a	n/a	n/a	1,659

[5] Data from US Department of Energy, *Transportation Data Book*, Chapter 2, Table 2.12 Passenger Travel and Energy Use, 2006, http://www-cta.ornl.gov/data/chapter2.shtml. Data for Toyota Prius from "Greenhouse Gas Emissions per Passenger Mile: Public Transport & Personal Mobility in USA in 2005", http://www.demographia.com/db-ghg-carstr.pdf .

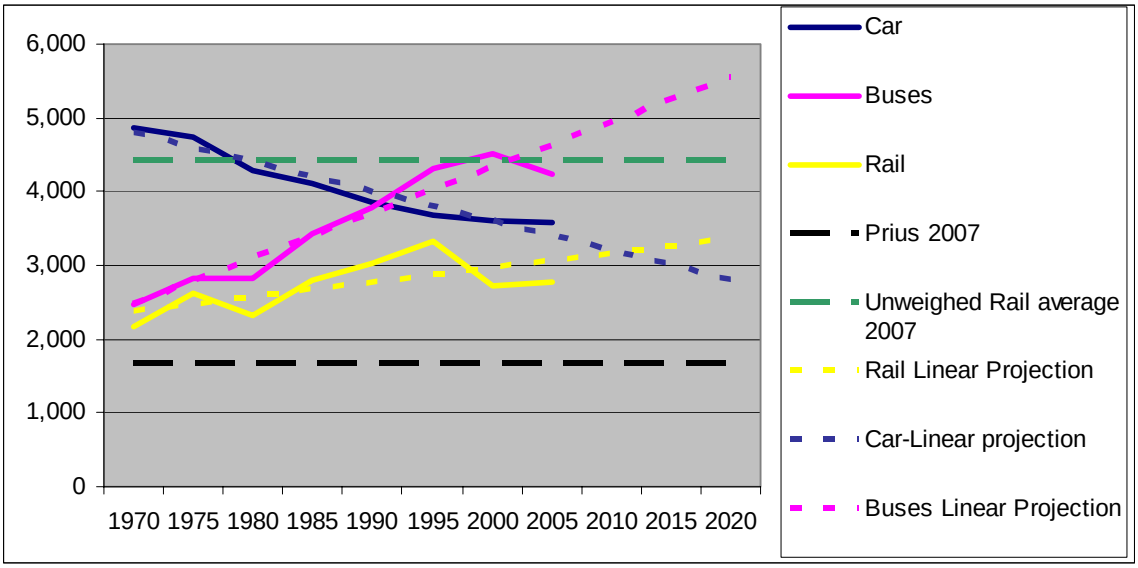
The previous table shows energy usage per passenger mile for various commuting methods. Note that the US Department of Energy used mileage data from 2006 and vehicle information for 2002 models.

The Department of Energy warns that "great care should be taken when comparing modal energy intensity data among modes. Because of the inherent difference between the transportation modes in the nature of services, routes available, and many additional factors, it is not possible to obtain truly comparable national energy intensities among modes. These values are averages, and there is a great deal of variability even within a mode."

Though these figures are estimates, in 2006, rail transit did show slightly better energy usage per passenger than cars and did even better compared to buses. Only motorcycles and vanpool show better energy usage figures. That said, the outlook for the energy usage of new model cars is excellent. A popular hybrid car in Hawaii, the Toyota Prius consumes much less energy than rail, about the same amount as motorcycles. Even more energy efficient will be the Tesla Motors and Tango electric cars which will doubtlessly show an improvement over the Prius. The compressed air hybrid cars scheduled for sale in the US in 2010 or 2011 reportedly get mileage in the 1,000 miles per tank range and will have even better energy usage figures. In five years when many current cars are replaced with newer, more efficient models, the average car will be more efficient per passenger mile than the average rail system.

Energy usage per passenger mile for cars is declining because of new and improved technologies. Energy usage per passenger mile for rail is increasing because of static systems, but also decreasing ridership.

Graph 5: USA Transportation Energy Use – BTU per passenger mile[6]



***Energy use for rail is calculated as the average among all systems and not a weighted average.

This graph, which forecasts energy usage, shows that usage per passenger mile for buses and rail is increasing and has been for decades. Automobile energy usage on the other hand has been

[6] Data for graph from "Transportation Energy Data Book", Table 2.13 and 2.14 by Davis and Diegel,, http://cta.ornl.gov/data/tedb27/Edition27_Chapter02.pdf .

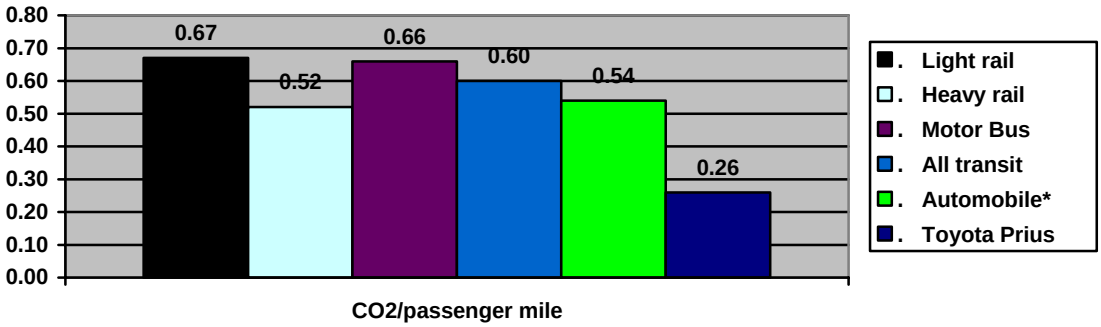
steadily decreasing. Energy usage for the Toyota Prius is added to the graph to show how 2007 hybrid technology compares to buses, rail and average cars. According to a study published by the Cato Institute the 2007 Toyota Prius is more efficient per passenger mile than every single rail system operating in the US.[7]

An issue not usually addressed is the energy used to construct the rail system relative to any energy savings from operating the system. The environmental impact statement for the Portland system estimates than even if it saved 23 billion BTU per year, it would take 172 years to repay the 3.9 trillion BTU used to construct the light rail system[8].

The Honolulu rail system environmental impact statement has been delayed and is not available at this time. When it is published, this aspect of energy usage will be added to this study so far as the data is made available in the report.

Transportation and the Carbon Footprint

Graph 6: Pounds of CO_2 per passenger mile[9]



*The figure for automobiles is for passenger cars and does not include light trucks or SUVs.

This graph was adapted from one created by the Thoreau Institute. The figures for light and heavy rail are weighted averages based on passenger miles. New York City heavy rail accounts for about half of the heavy rail passenger miles in the country and causes the heavy rail figure to be less than that for light rail. Note that the estimated CO_2 per passenger mile produced by automobiles is lower than that estimated for light rail and about the same as heavy rail. The estimated CO_2 per passenger mile produced by the Toyota Prius, a hybrid car, is significantly lower than light rail, heavy rail, bus and the average automobile.

The only commute method offering a significantly smaller carbon footprint per passenger mile is the Toyota Prius, a hybrid car. Compressed air cars with better gas mileage than the Prius will have even smaller carbon footprint per passenger mile. Co_2 estimates for bus, rail and average

[7] "Does Rail Transit Save Energy or Reduce Greenhouse Gas Emissions", Table 3 By Randal O'Toole, CATO Institute, www.cato.org/pubs/pas/pa-615.pdf .
[8] "North Corridor Interstate MAX Final Environmental Impact Statement" (Portland, OR 1999), pg 4-104.
[9] "Rail, Energy, & CO2: Part 2" — Results for 2005 published by the Thoreau Institute, http://www.ti.org/antiplanner/?p=218. Data for Toyota Prius from "Greenhouse Gas Emissions per Passenger Mile: Public Transport & Personal Mobility in USA in 2005", http://www.demographia.com/db-ghg-carstr.pdf .

automobiles are currently about the same per passenger mile. Only automobile technology however, shows potential for quick improvement.

Rail proponents have claimed that a rail transit system in Honolulu will somehow be more environmentally friendly than the popular alternative—commuting by car. The home page of Honolulutransit.org states that "Rail transit can be powered by electricity from renewable sources, and is endorsed by the Sierra Club."[10] In 2007, Oahu generated 96% of its electricity by burning diesel or coal (according to the Hawaiian Electric Company 2007 Corporate Sustainability Report)[11]. On Oahu, H-Power the city's waste burning power generation program is presently the only producer of electricity from "renewable" sources.[12]

On Oahu, anything powered by electricity has a significant carbon footprint.[13] Until a viable battery or energy storage technology is developed, the amount of energy generated from the sun or wind will have to be limited to approximately 20%. Since solar and wind generation sources are not available when it's cloudy, dark, or when the wind is not blowing, they cannot be relied upon to deliver power during peak usage periods. As HECO explains, "Unlike grid-connected utilities in the continental United States, each Hawaiian island has a stand-alone grid and must take extra care to ensure the 24-hour reliability of its own generation sources."[14]

Looking at Cost

Whether one believes the Honolulu heavy rail project will cost $3 billion, $4 billion, or $6 billion, there are other feasible lower priced options. This section focuses on High Occupancy Transit (HOT) lanes. Since January 2007, Honolulu residents have paid an extra half percent general excise tax (GET) on all purchases to finance the majority of the cost of rail construction. This is to continue through 2022. It was anticipated that collections would total about $4 Billion. The recent economic downturn in Hawaii and the mainland has resulted in fewer visitors and lower than expected GET collection this year. Reportedly, the rail transit budget includes $1 Billion for cost overruns (26% on a budget of $3.8 billion).[15]

As mentioned earlier, according to the city's Alternatives Analysis, when rail is combined with TheBus, overall mass-transit ridership is expected to increase to 7.4 percent of total transit trips in 2030, up from the projected 6.1 percent if the commuter rail system is not built. Thus it is forecast the rail will carry 1.3% of former Oahu car commuters.

A summary of the rail transit project compared to the HOT lanes option follows. Capital costs, as well as an estimate of operating costs and a calculation of costs per rider are shown.

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[10] Honolulutransit.org, http://honolulutransit.org/ retrieved on 10/29/08.

[11] HECO, "2007 Corporate Sustainability Report", http://www.heco.com/vcmcontent/StaticFiles/pdf/Sustainable_AR_vflr.pdf, pg 20

[12] HECO, "2007 Corporate Sustainability Report", http://www.heco.com/vcmcontent/StaticFiles/pdf/Sustainable_AR_vflr.pdf, pg 18 and 20

[13] HECO, "2007 Corporate Sustainability Report," http://www.heco.com/vcmcontent/StaticFiles/pdf/Sustainable_AR_vflr.pdf, pg 20.

[14] HECO, "2007 Corporate Sustainability Report", http://www.heco.com/vcmcontent/StaticFiles/pdf/Sustainable_AR_vflr.pdf, pg 4.

[15] "Tax take for Hawaii rail system shrinks along with economy", *Honolulu Advertiser*, by Sean Hao, 9/28/08, http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20080928/NEWS09/809280377

Cost of Rail Transit vs. HOT Lanes[16]

Table 8	Rail Transit	HOT Lanes
Capital Cost	Over $6 Billion	$0.9 Billion
Tax burden per Oahu resident-capital	Over $6,000	$442
Capital costs per daily commuter	$734,573	$15,000
Operating cost per year	$56 Million	$10 Million
Operating cost per rider/year	$6,856	$166
Realistic number of daily commuters[17]	8,168	60,000
Current tax revenue	13% increase to GET	No additional taxes
Additional tax revenue	40% property tax or equivalent needed to cover 70+% of operating costs	No additional taxes

Rail transit fares would cover only an estimated 30% of the operating costs[18], requiring the remaining 70% to come from a property tax increase and/or an additional GET increase. In some cities where rail construction was financed by temporary sales tax increases, those increases were extended to pay for overruns and operating costs.

HOT lanes, like those proposed in "Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu", a study directed by University of Hawaii Manoa professor Panos Prevedouros, are designed to be financed by tolls and shouldn't require any tax increase.[19] Hawaii is already one of the most highly taxed states in the country and in the midst of an economic downturn. Additional tax increases would motivate business owners and high-income residents to flee to lower tax jurisdictions and further depress the economy. This could decrease revenues further in spite of higher tax rates.

Population numbers hint that the migration may have already begun. The 13% GET hike (from 4 to 4.5%) went into effect in January 2007. Coincidentally or not, between March 2007 and July 2008, the City & County of Honolulu population decreased from 909,863 to 905,601, a loss of 4,262 or 0.5%, while population increased on the other islands. While it remains to be seen if this trend continues, fewer commuters and a shrinking tax base will not pay for the rail transit project.

Conclusion

Though the City & County of Honolulu already enjoys a public transportation usage percentage of 7.6% according to US Census data for 2007—following only New York City, Chicago, Boston and San Francisco on our list of high public transit usage cities—the city hopes to reduce

[16] Table adapted from "Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu" directed by Professor Panos D. Prevedouros, of the University of Hawaii at Manoa,
[17] "Popularity of mass transit questioned", *Honolulu Advertiser*, by Sean Hao, 7/15/08 , http://www.honoluluadvertiser.com/apps/pbcs.dll/article?AID=/20080715/NEWS09/807150360/-1/NEWS09
[18] Fare revenue of TheBus as a percentage of operating expenses for 2007, http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2007/agency_profiles/9002.pdf
[19] "Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu" directed by Professor Panos D. Prevedouros, of the University of Hawaii at Manoa, pg ii, http://www.eng.hawaii.edu/~panos/UHCS.pdf.

highway congestion and get car commuters to take public transit by building a multi-billion dollar heavy rail transit system.

Because of the complexity of the project and the length of the two studies on the issue—*Alternatives Analysis* by Parsons Brinkerhoff (124 pgs) and *Transportation Alternatives Analysis for Mitigating Traffic Congestion between Leeward Oahu and Honolulu*, directed by Professor Panos D. Prevedouros of the University of Hawaii at Manoa (143 pgs), claims about the system have surfaced and remain untested. This study focused on public transportation ridership, energy usage and CO_2 generation. After review of the studies above, data from the US Census Bureau, Department of Energy and other sources we found:

- Share of public transportation commuters decreases after rail transit systems are built the great majority of the time;
- Rail transit has about the same energy efficiency per passenger mile as the most popular commute option—cars. And today's cars are being replaced constantly by more efficient models;
- The energy necessary to build a rail system offsets any estimated energy savings. Portland's environmental impact statement estimates the system would need 172 years of savings—moving commuters from cars to rail—in order to make up for construction; and
- The CO_2 output of the light and heavy rail, buses and the average car are presently very nearly the same. With the advent of hybrid and other more efficient cars and the high turnover of cars, the average car will soon surpass all other commute options, including heavy rail. This argues for transit systems that allow for large numbers of energy efficient cars.

Methodology and Appendix

Much of the commuting data for this survey comes from the US Census, American Community Survey. Data for the 2005 – 2007 1-year estimates is available using the American Fact Finder. As much as possible we used the Metropolitan Statistical Area which seemed more appropriate with regards to area commuting. Data is also available for a smaller metropolitan area and for the city itself. Generally the data used is from Table S0801 Commuting Characteristics by Sex, which contains data for workers 16 years and over, means of transportation to work (%), place of work, time leaving home to go to work, travel time to work and number of vehicles available.

Data was also used from the 1960, 1970, 1980, 1990 and 2000 decennial censuses. The report called Journey to Work was used and the largest metropolitan area with population figures closest to the subsequent census was used. The footnotes contain the links for the actual website pages.

The master table of commute data from the US Census appears in the Appendix.

Appendix - Table of Public Transit, Private Vehicle and Walking/Biking Commuting Share Data from US Census Bureau

City (year of rail start)	Public Transit commuting share (%)						Private vehicle commuting share (%)						Walking and biking commuting share (%)					
	1960	1970	1980	1990	2000	2007	1960	1970	1980	1990	2000	2007	1960	1970	1980	1990	2000	2007
Boston(1988)	25.6	19.7	16.1	14.7	13.9	8.0	62.2	68.2	74.1	77.8	83.6	83.5	12.2	12.1	9.8	7.4	4.5	4.5
Chicago(1892)	33.0	23.6	18.3	14.9	11.5	11.3	57.3	68.5	75.5	80.6	82.2	81.5	9.7	7.9	6.2	4.5	3.4	3.5
Denver(1994)	10.4	4.5	6.5	4.4	4.3	4.5	80.5	89.1	88.1	91.3	87.8	86.0	9.1	6.3	5.3	4.3	3.1	3.6
Detroit(1987)	13.8	8.4	4.1	2.6	1.8	1.6	79.8	87.0	93.1	95.4	93.8	93.4	6.4	4.6	2.8	2.6	2.5	2.1
Houston(2004)	11.8	5.8	3.3	4.1	3.3	2.6	83.0	90.6	93.9	93.3	92.3	92.3	5.2	3.6	2.8	2.6	1.9	1.8
Los Angeles(1988)	8.7	5.8	7.7	6.7	4.7	4.8	85.2	89.2	88.0	89.3	87.8	87.6	6.4	5.0	4.2	4.0	3.2	3.2
New York(1905)	44.6	35.9	28.3	26.6	24.9	26.6	44.7	55.4	63.6	66.7	66.3	63.4	10.7	8.7	8.1	6.7	5.9	6.2
Phoenix (2008)	4.3	1.6	2.2	2.1	2.0	2.5	88.7	93.8	94.6	93.7	91.3	90.1	7.0	4.6	3.2	4.2	3.0	2.5
Portland(1986)	10.9	6.0	8.6	5.8	5.7	5.6	80.8	87.3	86.2	90.3	85.9	84.6	8.3	6.7	5.2	3.9	3.8	3.4
Sacramento(1987)	5.1	2.3	3.6	2.5	2.7	2.3	84.9	90.4	90.2	92.7	89.7	89.1	10.0	7.3	6.2	4.7	3.6	3.6
San Diego(1981)	7.1	4.5	3.5	3.4	3.4	3.6	84.8	81.0	86.0	90.8	88.2	86.8	8.1	14.5	10.5	5.8	4.0	3.5
San Francisco(1972)	19.6	16.0	17.0	14.5	9.5	9.9	71.4	77.3	77.5	80.0	82.2	79.9	9.0	6.7	5.5	5.5	4.4	5.0
12 US metros	15.9	10.7	9.3	8.0	7.3	8.0	75.6	81.9	84.8	87.4	85.9	84.9	8.5	7.4	5.8	4.6	3.6	3.6
Honolulu (2012)	n/a	n/a	10.0	9.3	8.3	7.6	n/a	n/a	n/a	78.6	80.8	81.7	n/a	n/a	n/a	9.3**	6.5	6.0
San Juan(2004)	n/a	n/a	n/a	n/a	6.3	4.1	n/a	n/a	n/a	n/a	86.6	87.8	n/a	n/a	n/a	6.86**	3.7	3.3
US Average(rail%)	**12.1(3.8)**	**12.1(3.8)**	**8.9(3.0)**	**6.4(2.2)**	**5.3(2.1)**	**4.7(2.1)**	**4.9**	**64.0**	**77.7**	**84.1**	**86.5**	**86.6**	**87.8**	**9.9**	**7.4**	**6.1**	**4.6**	**3.3**

Data for private vehicles includes motorcycles and other personal motorized vehicles.
Before 2000, commuting by taxicab was included in public transportation share. In 2000 and after it was included in private vehicle share.
*Primary metropolitan statistical area used for Phoenix and San Diego in 2007 because combined metropolitan area was not available.
**In 1990 by definition walking included working at home.

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