

Streetcar Economics “The Trip Not Taken”

The development of the Small Starts legislation through SAFETEA-LU with the resultant rule making from the Federal Transit Administration has highlighted the debate surrounding federal transportation policy. Current policy on New Starts has emphasized travel time savings as a key component of determining cost effectiveness. The reliance on travel time savings ignores perhaps the most effective means of solving our transportation problems which is reducing dependence on single occupancy vehicles or “the trip not taken”. The most effective means of solving transportation problems is to reduce the total amount of vehicle trips in a region.

Vehicle trip reduction in a region may be accomplished through the development of an urban community in a compact form that is well served by alternative transportation modes. A critical alternative to the vehicle trip is walking. Walking becomes a preferred mode when desired services are in close proximity to a residence. This occurs in higher density development areas with excellent amenities.

Table 1 prepared by Metro in Portland, Oregon shows mode share by transit and land use characteristics. Mixed-use areas of Portland with good transit service have much lower auto use at 58.1% of trips and 9.80 vehicle miles per capita. Typical suburban areas of the region have higher auto use at 87.3% of trips and 21.79 vehicle miles per capita.

Land Use Type	Mode Share					Vehicle Miles Per capita	Auto Ownership per household
	Percent Auto	Percent Walk	Percent Transit	Percent Bike	Percent Other		
Good Transit/Mixed Use	58.1%	27.0%	11.5%	1.9%	1.5%	9.80	0.93
Good Transit Only	74.4%	15.2%	7.9%	1.4%	1.1%	12.38	1.50
Remainder of Multnomah County	81.5%	9.7%	3.5%	1.6%	3.7%	17.34	1.74
Remainder of Region	87.3%	6.1%	1.2%	0.8%	4.6%	21.79	1.93

Source: Metro 1994 Travel Survey

Streetcar Role in Mixed Use Development

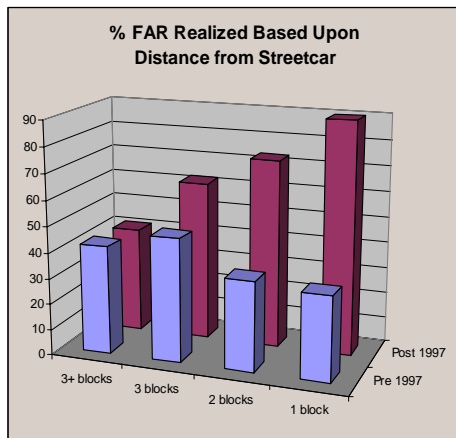
Interest in streetcar projects has grown around the country where over 80 cities are evaluating or implementing a streetcar system as high density circulator transit. Streetcar projects in Portland, Tampa, Little Rock and Kenosha have encouraged other cities to evaluate the same type of service. Streetcars serve as circulators for short trips in higher density areas. There is evidence

that the development market is responding in higher density areas that have this quality circulation as an amenity.

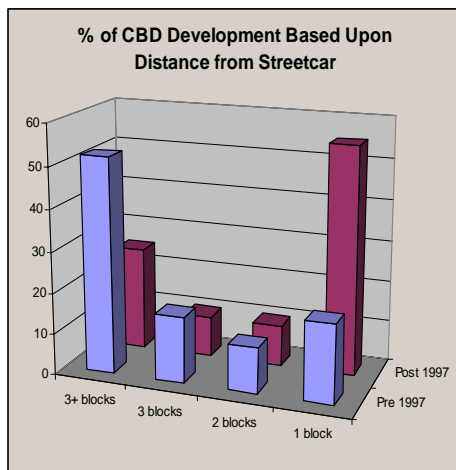
- 1. Direct Development Response:** Areas around recently built streetcar systems have experienced significant private development. The cities listed below all have had very positive results regarding private development along streetcars as shown in Table 2 below.

	Start of Service	Initial Track Miles	Initial System Cost Per Track Mile (Millions)	Initial System Cost (Millions)^	Development Investment (Millions)*	Return on Investment (%)	Expansion Planned
Kenosha	2000	2.0	3.00	6.00	150	2400.00	Yes
Little Rock	2004	2.5	7.84	19.60	200	920.41	Yes
Tampa	2003	2.3	24.35	56.00	1,000	1685.71	Yes
Portland (1)	2001	4.8	11.50	55.20	1,046	1794.93	Yes
Portland (2)	2005	1.2	14.83	17.80	1,353	7501.12	Yes

^ This represents the total costs of the project including maintenance facilities and in Tampa's case, land acquisition.
 * This represents planned and existing development investments directly related to the lines. Numbers were through interviews in Little Rock and Kenosha, a development study in Portland, and calculations of new planned development located three blocks or less from the streetcar in Tampa.



- 2. Developers Respond to Streetcar:** In Portland, developers adopted a much higher density approach once the streetcar was implemented. Prior to 1997, 30% of the floor area ratio (allowed density) was used by developments along the streetcar route. Since 1997, developers have averaged 90% of allowable density within 1 block of streetcar and 75% of allowable density within 2 blocks of streetcar.



- 3. Market Responds:** The market has responded by supporting many projects in the Portland Streetcar corridor. Since 1997, 53% of all the Central City development has been within 1 block of the streetcar

Trip Reduction

One critical missing element in federal analysis of cost effectiveness is the amount of vehicle trip reduction expected with a particular combined development and transit strategy for a community. This element is often incorporated in the economic development and land use analysis evaluation for a project. What is not typically captured in this evaluation are the enormous transportation implications of these projects. A simple and quantifiable way to measure these implications is to compare vehicle miles traveled under different transit and development scenarios. Using Portland data, several scenarios below illustrate this measurement.

Scenario 1, Existing Portland Streetcar: Portland Streetcar Inc. has conducted an evaluation of the development impacts of 7,248 new housing units within 2 blocks of the streetcar. The travel reduction resulting from adding this housing to a higher density area with streetcar service is estimated below using Metro travel mode split data from Table 1. Table 3 shows the estimated reduction in vehicle miles traveled (59 million vehicle miles saved per year) and acres consumed (302 acres of land saved) for the 7,248 households in this development area.

Table 3. Expanding the Hovee Research - June 15, 2006		
7248 Households (Source: Portland Streetcar Development Oriented Transit January 2006)		
	High Density Environment	Suburban Environment
No. of Households	7,248	7,248
Total Persons *	15,946	15,946
Average Vehicle Miles/Day	9.8	21.79
Number of Days	313	313
Vehicle Miles/Year	48,911,533	108,756,025
Vehicle Miles Savings/Year	59,844,492	
		2,393 trips around the Earth 125 trips to the Moon and back
Units/Acre	120	20
Acres Used	60	362
Land Saved	302	

* Assumes average regional household size of 2.2

Scenario 2, Proposed Eastside Streetcar: The Eastside Alternatives Analysis Evaluation Report prepared by Metro included projections for housing units with streetcar (4,537) and without streetcar (1,105). The projections for these household numbers were prepared by E.D. Hovee and Associates and was based upon experienced market response to the current Portland Streetcar alignment. . Table 4 shows the estimated reduction in vehicle miles traveled (28 million miles per year) that would be the result of building 3,432 units in Eastside Streetcar development area over building the units somewhere else in the region.

Table 4.		
Eastside Streetcar Loop:	4,537	Projected
No Streetcar Loop:	1,105	Projected
	High Density Environment	Suburban Environment
No. of Households	3,432	3,432
Total Persons *	7,550	7,550
Avg. Vehicle Miles/Day	9.8	21.79
Number of Days	313	313
Vehicle Miles/Year	23,158,870	51,493,039
Vehicle Miles Savings/Year	28,334,169	
Units/Acre	120	12
Acres Used	29	286
Land Saved	257	

*Assumes average regional household size of 2.2

Scenario 3, Single Development: A 250 unit condominium on a single block currently receives one point from LEEDS certification process. These same households located in the suburbs would have just over 2 million more vehicle miles traveled each year in the region and would require 19 acres of additional land.

Table 5.		
Downtown Condo: 250 Units		
	High Density Environment	Suburban Environment
No. of Households	250	250
Total Persons *	550	550
Avg. Vehicle Miles/Day	9.8	21.79
Number of Days	313	313
Vehicle Miles/Year	1,687,070	3,751,149
Vehicle Miles Savings/Year	2,064,079	
Units/Acre	120	12
Acres Used	2	21
Land Saved	19	

*Assumes average regional household size of 2.2

Summary

The cost effectiveness of compact urban development is easily quantifiable and ought to be integral in evaluations of federal transportation projects. Single occupancy vehicle trip reduction as the result of development related to transit projects deserves greater consideration. Streetcars have been effective in improving the market for the type of residential project that has the most impact on vehicle trip reduction, namely high density mixed use development with good transit. The measure of Portland's success with this strategy has been developed by Metro (TriMet?) and is shown below in the chart of growth from 1993 to 2003. Vehicle miles traveled in the region has grown at a slower rate than the population of the region, 19%. Transit ridership has increased 55% in the same time period.

