



**Washington State  
Department of Transportation**

# Measures, Markers and Mileposts

*Gray Notebook Special Excerpt*

## **Transportation Benchmarks 2003 Report**



# Benchmark: Administrative Efficiency

RCW 47.01.012 establishes a policy goal that WSDOT's administrative costs as a percentage of transportation spending should fall into the lowest 25 percent ("most efficient quartile") among all 50 states. The Transportation Commission has incorporated this suggested benchmark for national comparison and established an internal administrative cost benchmark for WSDOT.

## WSDOT's Benchmark

WSDOT's *internal* administrative benchmark reflects the agency's administrative cost in relation to its total expenditures. For FY 2002, WSDOT's administrative allocation was 3.8 percent — \$59,862,950 of the agency's total expenditures of \$1,568,546,491.

## National Comparisons

For national comparison, WSDOT uses the Federal Highway Administration's (FHWA) annual *Highway Statistics* report, which compiles expenditure and performance information from the states. To develop a benchmark, the Transportation Commission and WSDOT referred to FHWA's guidance and *Item A.4.a. General administration and miscellaneous expenditures*.

State DOTs use different methods to track and report data to FHWA and differ widely in structure and function. For example, some state transportation departments include driver licensing, which in Washington is part of the Department of Licensing (DOL). Some states report lower administrative costs than WSDOT by allocating certain expenses to specific projects and excluding miscellaneous non-DOT expenses from their administrative cost reports. Other states generally also include information from non-DOT transportation agencies in their FHWA reports, but the mix is inconsistent and may include law enforcement, safety, interest payments, and bond retirement.

WSDOT's national benchmark compares each state's reported *A.4.a.* administrative cost to the total of that state's capital outlay, maintenance, and operations expenditures (core functions of a state department of transportation.). The table at right shows that using this national comparison, Washington ranks as the 21st lowest state with 6.8 percent administrative costs for 2001.

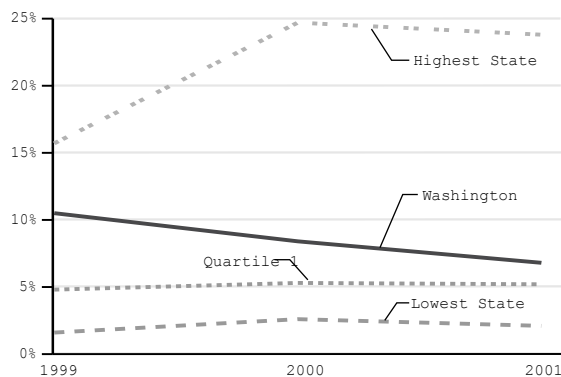
In past years, WSDOT included administrative costs for other transportation agencies, such as the County Road Administration Board and DOL, in FHWA administrative cost reports. Following FHWA guidance, some of these non-WSDOT costs will be moved out of *A.4.a.* in WSDOT's FY 2002 report.

## 2001 National Administrative Cost Comparison

State	Admin. Percent	Rank
Colorado	2.1%	1
Arkansas	2.2%	2
Indiana	2.4%	3
Wyoming	2.7%	4
New Mexico	2.8%	5
Kentucky	3.0%	6
Missouri	3.2%	7
Pennsylvania	3.9%	8
Maine	4.2%	9
Maryland	4.5%	10
West Virginia	4.6%	11
Florida	4.8%	12
Iowa	5.1%	13
Alabama	5.2%	14
Georgia	5.6%	15
Michigan	5.6%	16
Virginia	5.9%	17
Alaska	6.5%	18
Idaho	6.6%	19
New York	6.7%	20
<b>Washington</b>	<b>6.8%</b>	<b>21</b>
New Hampshire	6.8%	22
Illinois	6.9%	23
North Carolina	6.9%	24
Kansas	7.0%	25
<b>Median</b>	<b>7.2%</b>	
Texas	7.5%	26
Vermont	7.5%	27
Mississippi	8.2%	28
Massachusetts	8.3%	29
Oklahoma	8.3%	30
Nevada	8.6%	31
Minnesota	8.8%	32
South Carolina	8.9%	33
Oregon	9.1%	34
Utah	9.1%	35
South Dakota	9.2%	36
Delaware	9.5%	37
Rhode Island	9.8%	38
Nebraska	9.9%	39
Tennessee	10.3%	40
Ohio	10.6%	41
Wisconsin	11.6%	42
Connecticut	11.8%	43
New Jersey	12.2%	44
California	13.0%	45
Montana	13.8%	46
Arizona	16.0%	47
North Dakota	16.6%	48
Louisiana	23.4%	49
Hawaii	23.8%	50

Source: WSDOT analysis of FHWA data.

Washington Administrative Cost Target  
Percent of Capital Outlay, Maintenance, and Operat



Source: WSDOT analysis of FHWA data.

A number of variables affect administrative costs from year to year. Increases or decreases in the size of the WSDOT construction program affects the percentage of administrative costs compared to total agency cost. In addition, the costs of services provided by other state agencies have been increasing in recent years. Most of these services are mandatory and beyond WSDOT's control. Self-insurance costs continue to increase dramatically.

This chart shows Washington's nationally-reported administrative cost percentage for 1999, 2000, and 2001. Washington is showing progress toward meeting the first quartile target set by the Legislature in 2002. The agency has moved from the top of the last quartile for 1999 to the middle of the second quartile for the 2001 report, at 6.8%.

# Benchmark: Transit Efficiency

RCW 47.01.012 also requires the Washington State Transportation Commission to establish a cost efficiency benchmark for the state's public transit agencies.

To address this mandate, the Commission's Benchmark Committee worked with the Washington State Transit Association (WSTA). WSTA proposed the following four measures that address cost efficiency, cost effectiveness, and service effectiveness.

- Operating cost per total hour
- Boardings per revenue hour
- Operating cost per passenger mile
- Operating cost per boarding

Efficiency and effectiveness measures evaluate the ability of a transit agency to provide service and meet the demand for transit services given existing resources.

Distinguishing between different types of services and system sizes is essential for valid benchmarking. The four adopted benchmarks compile statewide averages for fixed-route (scheduled) service at urban, small urban, and rural transit agencies, and statewide averages for demand response (on-call paratransit) and vanpool services. The performance of individual systems can be compared to these benchmarks.

The results for six urban transit systems are used below to highlight the differences that exist between systems. The six systems are Community Transit (CT), Clark County (C-TRAN), King County's Metro Transit Division, Everett Transit, Pierce Transit, and Spokane Transit Authority.

For more information about transit in Washington, see WSDOT's Annual Summary of Public Transportation Systems. The latest summary is available at [www.wsdot.wa.gov/transit/library/2001\\_summary/2001\\_summary.cfm](http://www.wsdot.wa.gov/transit/library/2001_summary/2001_summary.cfm).

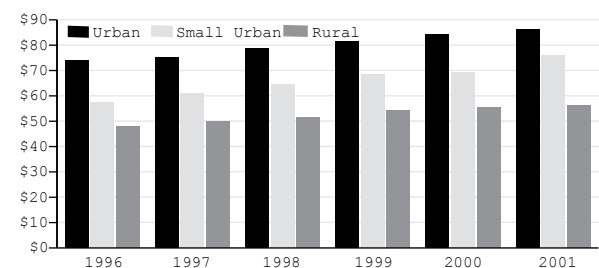
## Operating Cost Per Total Hour: Cost Efficiency

Costs are related to the size of the transit system and the nature of the area served. Larger transit systems are more complex and incur costs for fixed facilities (transit centers, park and ride lots, etc.), security, and other costs that smaller systems do not have. They also operate larger equipment in metropolitan areas with higher wages.

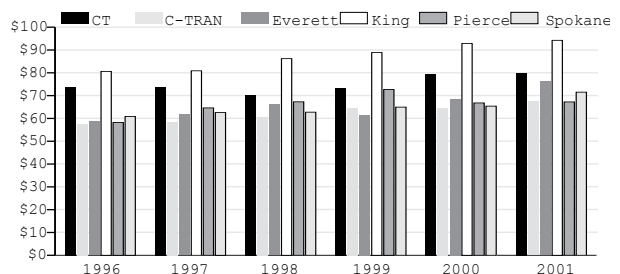
The average cost per hour for the rural and urban systems increased approximately 17% from 1996 to 2001, in line with inflation over this period. Average cost per hour for the small urban systems increased at a higher rate (31.9%). This appears to be due to significant service reductions by these systems in 2000 and 2001, resulting in fixed costs being spread over fewer service hours.

The highest costs in urban transit systems are experienced by King County Metro. Metro operates a fleet of articulated and electric trolley buses as well as the bus tunnel, park-and-ride lots, and numerous other fixed facilities.

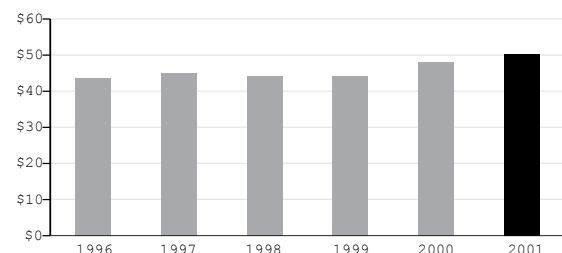
Average Fixed Route Cost per Total Hour  
Washington State Average by Transit System Size, 1996-2001



Fixed Route Cost per Total Hour for Six  
Six Urban Transit Systems in Washington, 1996-2001



Demand Response Service: Average Cost per Total  
Washington State Average for All Transit Systems, 1996-2001



The statewide average cost for demand response service is significantly lower than the fixed-route average cost. This is primarily due to the lower wage rates of demand response drivers. First, this service is contracted out by many systems to private or private non-profit agencies, who often pay less in wages and benefits than the public systems. Second, some transit systems pay their demand response drivers a lower compensation than their fixed-route drivers.

## Boardings Per Revenue Hour: Service Effectiveness

Boardings per revenue hour are the number of passenger boardings for every hour a transit vehicle is transporting passengers. This measure increases with population density and the type of service — urban local service, for example, shows higher boardings per revenue hour than express service.

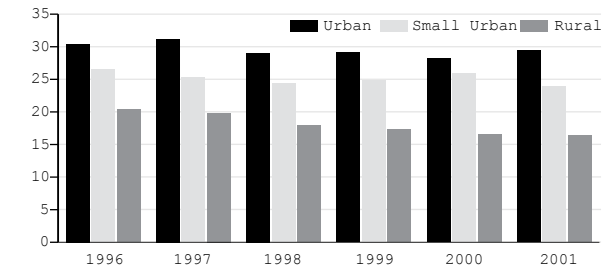
Performance has been relatively constant for the urban and small urban systems but has dropped among rural systems. The loss of both sales tax equalization and Motor Vehicle Excise Tax funding and the general economic downturn in rural Washington has forced rural systems to reduce service levels and increase fares, resulting in fewer passengers while spreading fixed costs over fewer hours of service.

King County Metro, with more than 30 boardings per revenue hour, exceeds the other urban systems in this measure. C-TRAN has seen this measure decline as a function of the increase of express service in its service mix.

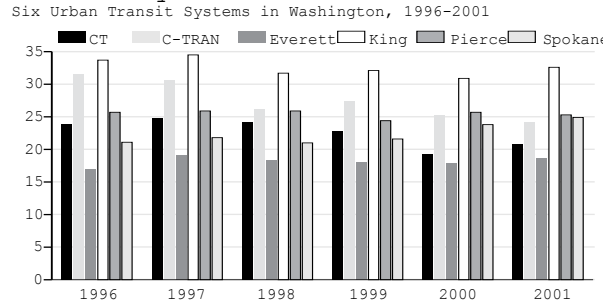
Demand Response Service:  
Average Boardings per Revenue Hour  
Washington State Average for All Transit Systems, 1996-2001



Average Fixed Route Boardings per Revenue Hour  
Washington State Average by Transit System Size, 1996-2001



Fixed Route Boardings per Revenue Hour for Six Systems  
Six Urban Transit Systems in Washington, 1996-2001



Increases in this measure for demand response service since 1999 are related to service area reductions and the elimination of the least productive services by some transit agencies. As these least productive services, usually serving low-density suburban or rural areas, are eliminated, the associated demand response service is also discontinued. Demand responsive trips in these areas tend to have long trip lengths and are difficult to group with other rides.

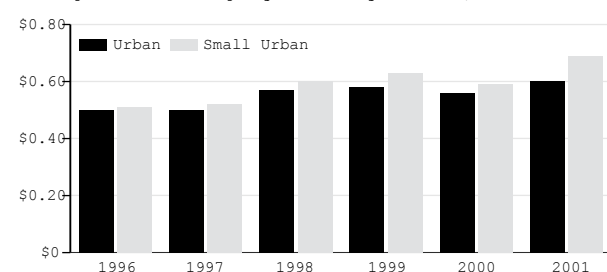
## Operating Cost Per Passenger Mile: Cost Effectiveness

Passenger miles are the transit parallel to vehicle miles traveled. Passenger mile information is not collected for rural systems. Also, this measure does not apply to demand response service.

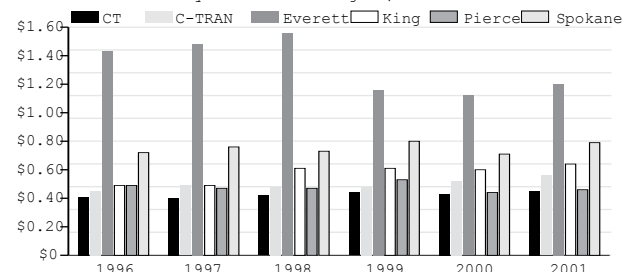
The trend for this measure generally reflects inflationary cost increases. The cost per passenger mile increased sharply for small urban systems from 2000 to 2001 due to significant service reductions and fare increases during 2000 by several systems in this category.

The chart illustrates the low cost per passenger mile rate of Community Transit — a system with a high level of express service — while Everett Transit, a system with little express service and short average trip length, has a higher cost per passenger-mile. Spokane's cost per passenger-mile reflects its lack of an extensive express route system such as those operated by the Puget Sound area systems.

Average Fixed Route Cost per Passenger Mile  
Washington State Average by Transit System Size, 1996-2001



Fixed Route Cost per Passenger Mile for Six Urban Transit Systems in Washington, 1996-2001



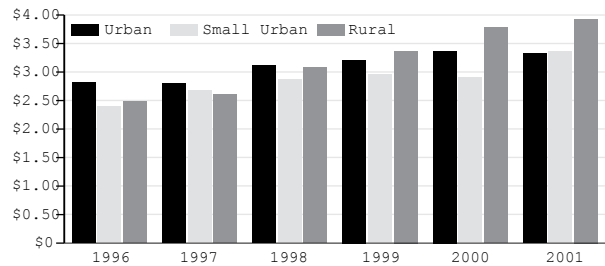
## Operating Cost Per Boarding: Cost Effectiveness

Operating cost per boarding measures the cost of carrying one passenger on a single bus trip. An important consideration is that passenger trips can vary greatly in distance. On some systems the average trip length is three miles. On other systems the average trip length is 11 miles. It is reasonable to expect that the latter system would have a higher cost per boarding. Rural transit service will generally be more expensive on a per passenger basis than urban service, largely due to lower population densities and longer trip lengths.

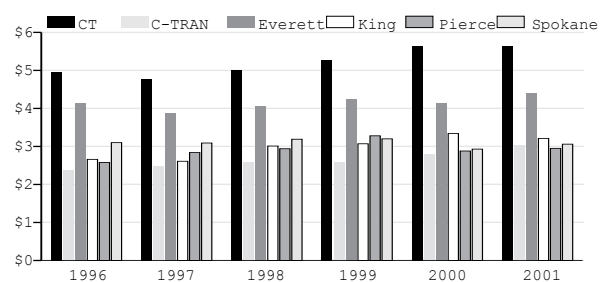
The cost has increased per boarding at approximately the rate of inflation for urban systems, while rural and small urban systems have seen the cost per boarding increase at a much higher rate. Small urban systems saw a significant increase from 2000 to 2001 because service reductions increased the cost per hour of service; also, increased fares led to fewer passengers. Rural systems faced these issues as well, and their cost effectiveness in this measure was hit particularly hard by increased health care and other employee costs.

This chart illustrates the effect of the type of service on cost per boarding and the limitations of using a single measure to determine the effectiveness of a transit system. Community Transit has a significantly higher cost per boarding than other systems due to the high level of express service it operates. Express service experiences fewer boardings per hour than local service but has much longer trip lengths. Despite the high cost per boarding, Community Transit has the lowest cost per passenger mile of any of the urban systems. The overall cost per boarding has been held relatively constant over this period among the large urban systems.

Average Fixed Route Cost per Boarding  
Washington State Average by Transit System Size, 1996-2001

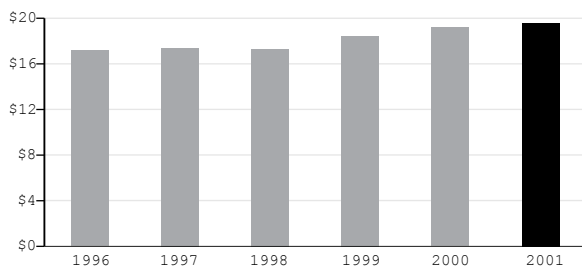


Fixed Route Cost per Boarding for Six Systems  
Six Urban Transit Systems in Washington, 1996-2001



Demand Response Service: Average Cost per Boarding

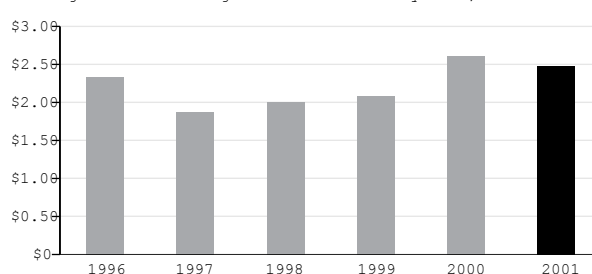
Washington State Average for All Transit Systems, 1996-2001



The cost per boarding for demand response service is approximately six times the cost per boarding for fixed-routes service. This measure was constant from 1996 to 1998 with costs increasing due to inflation and increased employee costs since 1999.

Vanpool Service: Average Cost per Boarding

Washington State Average for All Transit Systems, 1996-2001



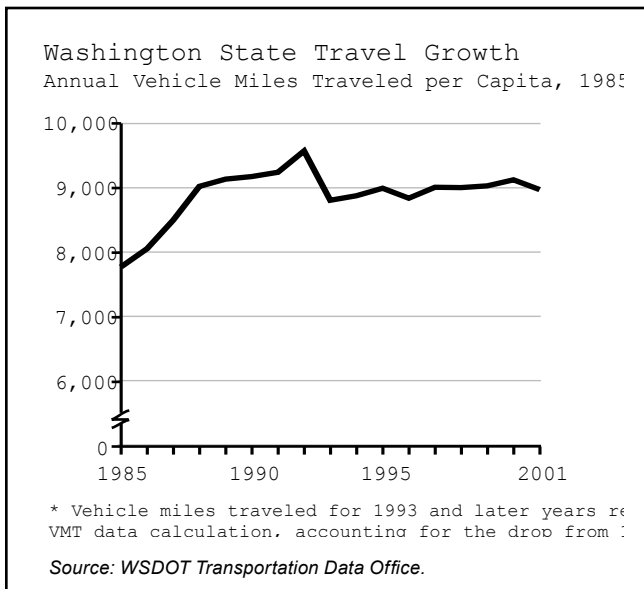
Operating cost per boarding is the only statewide benchmark for vanpool service. The cost-effectiveness of the vanpool program is particularly impressive, considering average trip lengths and that vanpool passenger fares cover a substantial portion of the program's operating and capital costs in many systems. Some systems choose to subsidize vanpool fares to make the service as attractive as possible.

# Benchmark: Vehicle Miles Traveled Per Capita

RCW 47.01.012 requires tracking the state's vehicle miles traveled (VMT) per capita, with a goal that it be maintained at 2000 levels. In 2000, the state's population traveled 9,133 vehicle miles per person on all roadways.

The chart shows that VMT per capita dipped below the 2000 level in 2001 to 8,982 miles per person — a decline of 1.7 percent. In the last twenty years, VMT has grown faster than the population (Washington's population has grown about 40 percent, while VMT has grown 60 percent). However, since the late 1980s, VMT per capita in Washington state has hovered very close to 9,000 miles per person per year (the apparent drop from 1992 to 1993 is actually due to a change in the way VMT is calculated)\*. Statistics for 2002 will be available in July 2003.

Washington has less vehicle travel per capita than most other states, ranking 41st highest in 2001.



## 2001 VMT per Capita by State

Rank	State	VMT per Capita
1	Wyoming	17,445
2	Vermont	15,686
3	Georgia	12,870
4	Alabama	12,716
5	New Mexico	12,701
6	Mississippi	12,592
7	Oklahoma	12,580
8	Missouri	12,013
9	Tennessee	11,783
10	Indiana	11,713
29	Texas	10,139
30	Michigan	9,908
31	Oregon	9,905
32	New Hampshire	9,780
33	Colorado	9,723
34	Maryland	9,673
35	Arizona	9,583
36	Florida	9,494
37	Ohio	9,372
38	Louisiana	9,221
39	California	9,006
40	Connecticut	9,005
<b>41</b>	<b>Washington</b>	<b>8,962</b>
42	Nevada	8,693
43	Pennsylvania	8,383
44	Massachusetts	8,310
45	Illinois	8,255
46	New Jersey	8,100
47	Rhode Island	7,546
48	Alaska	7,436
49	Hawaii	7,101
50	New York	6,876

Note: The slight difference between the results for Washington by WSDOT's Transportation Data Office (at left) and this table reflect data adjustments by FHWA.

Source: Federal Highway Administration and the U.S. Department of Commerce.

### \*How VMT is Calculated

Statewide VMT is based on sample data gathered and reported for the Highway Performance Monitoring System (HPMS).

VMT is estimated for the non-sampled mileage. In 1991, new federal legislation required a complete system inventory as the Federal Aid highway system changed and the National Highway System (NHS) was created. At the same time, HPMS data reporting increased to include all principal arterials and NHS routes. This additional data allowed actual calculations on mileage that had been estimated in previous years.

For 1993, the first reporting year for HPMS which reflected the system re-inventory and NHS, the VMT was more accurate than had been possible in the past. Current annual VMT calculations are based on more actual data than was available before 1993, since the calculations now include the total principal arterial mileage and NHS.