

The ACCESS Almanac:

AUTOS SAVE ENERGY

The October 1973 oil price shock made everyone realize how much energy Americans use for transportation—over a quarter of total U.S. energy use (Table 1). By 1993 energy consumption for transportation reached 22.83 quadrillion BTU (British thermal units), of which over 70 percent was used for passenger travel. Not surprisingly, automobile travel accounted for over 40 percent of all energy expended for transportation (Table 2).

Something has to be done. Many believe we'd conserve energy if more people would use transit. The American Public Transit Association estimates that, in terms of fuel efficiency, one bus with only seven passengers equals one auto. One full bus equals six autos, and one full rail car equals fifteen autos! Transit's potential to save energy seems promising. But there is one problem: how to fill those buses and rail cars with passengers. People have to be lured out of their comfortable automobiles. So, buses and trains have been fitted with air conditioning and other amenities that use extra energy but make them more attractive. Still, not enough riders are coming. Thus the number of passengers in each transit vehicle is falling, making transit less energy efficient.

In 1975 Congress set corporate average fuel economy (CAFE) standards to make new cars sold in the United States more energy efficient. While transit failed to get more passengers on board, the CAFE standards worked to reduce gallons of fuel per passenger mile of automobile travel. Now cars are more energy efficient than transit (Table 3). In 1980 the U.S. Department of Energy found that automobiles used an average of 4,782 BTU of energy per passenger mile—1.7 times more than buses and 1.6 times more than rail. But by 1993 the average auto consumed only 3,593 BTU per passenger mile. Compare this with buses, which used 4,374 BTU per passenger mile, and rail, at 3,687 BTU per passenger mile.

So, should government now encourage people to use cars to save energy? Or is there a way to reverse the trend toward single-occupant automobiles and attract more passengers into transit?

—Sharon Sarmiento

TABLE 1

YEAR	TOTAL (quad BTU)	TRANSPORTATION (quad BTU) % of total	PASSENGER TRAVEL (quad BTU) % of transport
1980	75.96	19.70 25.9	13.9 70.6
1981	73.99	19.51 26.4	13.7 70.2
1982	70.85	19.07 26.9	13.6 71.3
1983	70.52	19.13 27.1	13.8 72.1
1984	74.14	19.80 26.7	14.1 71.2
1985	73.98	20.07 27.1	14.4 71.7
1986	74.30	20.81 28.0	15.0 72.1
1987	76.89	21.45 27.9	15.2 70.9
1988	80.22	22.31 27.8	15.5 69.5
1989	81.33	22.56 27.7	15.7 69.6
1990	81.27	22.54 27.7	15.8 70.1
1991	81.12	22.12 27.3	15.4 69.6
1992	82.14	22.46 27.3	15.9 70.8
1993	83.96	22.83 27.3	16.3 71.4

Source: Transportation Energy Data Book, U.S. Department of Energy, 15th Edition, Table 2.6, p. 2-12; Table 2.19, p. 2-31.

TABLE 2

MODE	1992		1993	
	Tril. BTU	% share	Tril. BTU	% share
AUTOMOBILES	9240.5	40.9	9,392.6	40.7
MOTORCYCLES	23.8	0.1	24.7	0.1
TRANSIT BUSES	81.0	0.4	87.8	0.4
OTHER BUSES	93.2	0.4	94.1	0.4
TRUCKS	7538.5	33.3	7925.2	34.4
OFF HIGHWAY	665.2	2.9	706.5	3.1
AIR MODES	1970.8	8.7	1995.9	8.7
FREIGHT RAIL	425.1	1.9	381.6	1.7
TRANSIT RAIL	40.9	0.2	42.2	0.2
COMMUTER RAIL	22.0	0.1	21.4	0.1
INTERCITY RAIL	17.4	0.1	17.8	0.1
TOTAL TRANSPORT	22,2609.3	100.0	23,051.7	100.0

Source: Transportation Energy Data Book, U.S. Department of Energy, 15th Edition, Table 2.9, p. 2-16.

TABLE 3

YEAR	AUTOMOBILES		TRANSIT BUSES		RAIL TRANSIT
	BTU per vehicle mile	BTU per passenger mile	BTU per vehicle mile	BTU per passenger mile	BTU per passenger mile
1980	8,130	4,782	36,553	2,813	3,008
1981	7,894	4,644	37,745	3,027	2,946
1982	7,558	4,446	38,766	3,237	3,069
1983	7,314	4,302	37,962	3,177	3,212
1984	7,031	4,136	37,507	3,204	3,732
1985	6,880	4,047	38,862	2,421	3,461
1986	6,853	4,031	39,869	3,512	3,531
1987	6,530	3,841	38,557	3,542	3,534
1988	6,275	3,598	39,121	3,415	3,585
1989	6,095	3,809	36,583	3,711	3,397
1990	5,983	3,739	36,647	3,735	3,453
1991	5,767	3,604	36,939	3,811	3,710
1992	5,738	3,586	37,071	3,970	3,575
1993	5,748	3,593	39,081	4,374	3,687
AVERAGE ANNUAL PERCENTAGE CHANGE					
1980-83	-3.5	-3.5	1.3	4.2	2.3
1984-93	-2.4	-1.7	0.3	4.4	1.6

Source: Transportation Energy Data Book, U.S. Department of Energy, 15th Edition, Table 2.15, p. 2-25 (series not continuous between 1983 and 1984 because of a change in American Public Transit Association data source).