

Performance Measure Summary – Albany-Schenectady, NY

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2007. There is no single performance measure that experts agree “says it all.” The best comparison of congestion levels and trends is done between regions of similar size, over several years, and with a few measures of congestion. Examining a few measures over many years reduces the chance that data variations or the estimating procedures may have caused a “spike” in any single year. A few key points should be recognized by users of the Urban Mobility Report data.

Use the Trends – The multi-year performance measures are better indicators, in most cases, than any single year. (*5 years is 5 times better than 1 year*).

Use several measures – Each performance measure illustrates a different element of congestion. (*The view is more interesting from the top of a few measures*).

Compare to similar regions – Congestion analyses that compare areas with similar characteristics (for example population, growth rate, road and public transportation system design) are usually more insightful than comparisons of different regions. (*Los Angeles is not Peoria*).

Compare ranking changes and performance measure values – In some performance measures a small change in the value may cause a significant change in rank from one year to the next. This is the case when there are several regions with nearly the same value. (*15 hours is only 1 hour more than 14 hours*).

Consider the scope of improvement options – Any improvement project in a corridor within most of the regions will only have a modest effect on the regional congestion level. (*To have an effect on areawide congestion, there must be significant change in the system or service*).

Performance Measures and Definition of Terms

Travel Time Index – A measure of congestion that focuses on each trip and each mile of travel. The ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates a 20-minute free-flow trip takes 26 minutes in the peak.

Peak Travelers – Number of travelers (using any travel mode) who begin a trip during the morning or evening peak travel periods (6 to 9 a.m. and 4 to 7 p.m.).

Annual Delay per Traveler – A yearly sum of all the per-trip delays. This measure illustrates the effect of the per-mile congestion as well as the length of each trip. The extra time required to travel in the peak period is divided by the number of travelers who begin a trip during the peak period (6 to 9 a.m. and 4 to 7 p.m.).

Total Delay – The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).

Free-Flow Speeds (60 mph on freeways and 35 mph on arterials) – These values are used as the national comparison thresholds. Other speed values may be appropriate for urban areas or sub-regions.

Excess Fuel Consumed – Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Public Transportation – Regular route service from all public transportation providers in an urban area.

Operations Treatments – Freeway incident management, freeway ramp metering, arterial street signal coordination and arterial street access management.

Congestion Cost – Value of travel delay for 2007 (estimated at \$15.47 per hour of person travel and \$102.12 per hour of truck time) and excess fuel consumption (estimated using state average cost per gallon).

Annual Increase Needed to Maintain Constant Congestion Level – Number of lane-miles that must be added to the road system each year – or – the number of new transit riders or carpoolers that must be added to keep congestion levels the same as the previous year.

Urban Area – The developed area (population density more than 1,000 persons per square mile) within a metropolitan region. The urban area boundaries change frequently (every year for most growing areas). The annual change in miles traveled, therefore, includes both new travel due to growth and travel that previously occurred in areas designated as rural.

Number of Rush Hours – Time when system might have congestion.

The Mobility Data for Albany-Schenectady NY

Inventory Measures	2007	2006	2005	2004	2003	2002
Urban Area Information						
Population (1000s)	595	590	575	560	545	530
Rank	67	67	67	68	69	69
Urban Area (square miles)	410	405	400	395	390	385
Population Density (persons/sq mile)	1,451	1,457	1,438	1,418	1,397	1,377
Peak Travelers (1000s)	327	323	312	302	293	281
Freeway						
Daily Vehicle-Miles of Travel (1000s)	7,005	6,755	6,400	6,210	6,000	5,820
Lane-Miles	615	600	575	560	550	550
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	5,260	5,205	4,800	4,660	4,475	4,450
Lane-Miles	1,175	1,160	1,135	1,135	1,135	1,135
Public Transportation						
Annual Psgr-Miles of Travel (millions)	47.9	44.9	42.7	53.1	53.6	46.9
Annual Unlinked Psgr Trips (millions)	12.9	12.9	11.8	11.7	11.8	12.1
Cost Components						
Value of Time (\$/hour)	15.47	15.06	14.58	14.10	13.73	13.43
Commercial Cost (\$/hour)	102.12	98.77	94.06	86.24	82.38	79.96
Fuel Cost (\$/gallon)	3.19	2.82	2.40	2.14	1.62	1.49
System Performance	2007	2006	2005	2004	2003	2002
Congested Travel (% of peak VMT)	28	26	25	24	22	21
Congested System (% of lane-miles)	35	33	33	33	32	32
Congested Time (number of "Rush Hours")	4.2	4.0	3.8	3.8	3.6	3.2
Annual Increase Needed to Maintain Constant Congestion Level:						
Lane-miles	64	59	44	40	36	42
Transit Riders or Carpoolers (millions)	15	14	10	9	8	9
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	3,842	3,367	2,927	2,790	2,420	2,151
Rank	69	69	69	70	70	73
Fuel per Peak Traveler (gallons)	12	10	9	9	8	8
Rank	65	70	70	73	74	73
Annual Delay						
Total Delay (1000s of person-hours)	6,082	5,433	4,702	4,486	3,911	3,462
Rank	67	69	70	71	72	73
Delay per Peak Traveler (person-hours)	19	17	15	15	13	12
Rank	64	68	71	72	73	74
Delay due to Incidents (percent)	57	56	56	56	56	55
Travel Time Index	1.10	1.09	1.08	1.08	1.07	1.06
Rank	64	70	77	75	78	82
Congestion Cost						
Total Cost (\$ millions)	131	112	92	83	69	60
Rank	66	69	69	70	70	72
Cost per Peak Traveler (\$)	401	346	295	276	237	213
Rank	63	68	70	72	72	72

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Albany-Schenectady NY, Continued

Inventory Measures	2001	2000	1999	1998	1997
Urban Area Information					
Population (1000s)	520	515	510	505	500
Rank	69	69	68	68	67
Urban Area (square miles)	380	375	370	370	370
Population Density (persons/sq mile)	1,368	1,373	1,378	1,365	1,351
Peak Travelers (1000s)	272	266	261	255	249
Freeway					
Daily Vehicle-Miles of Travel (1000s)	5,730	5,500	5,330	5,150	4,975
Lane-Miles	550	550	545	540	525
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	4,400	4,375	4,350	4,280	4,100
Lane-Miles	1,135	1,135	1,135	1,135	1,135
Public Transportation					
Annual Psgr-Miles of Travel (millions)	43.2	40.9	47.5	45.6	48.4
Annual Unlinked Psgr Trips (millions)	11.7	11.5	11.3	11.2	11.5
Cost Components					
Value of Time (\$/hour)	13.22	12.85	12.43	12.17	11.98
Commercial Cost (\$/hour)	80.88	80.75	74.23	72.61	74.32
Fuel Cost (\$/gallon)	1.72	1.64	1.19	1.15	1.31
System Performance	2001	2000	1999	1998	1997
Congested Travel (% of peak VMT)	19	17	16	14	13
Congested System (% of lane-miles)	32	30	30	25	26
Congested Time (number of "Rush Hours")	3.2	3.0	2.9	2.9	2.8
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	48	50	49	44	38
Transit Riders or Carpoolers (millions)	10	10	10	9	7
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	1,945	1,772	1,594	1,466	1,281
Rank	72	75	77	74	76
Fuel per Peak Traveler (gallons)	7	7	6	6	5
Rank	76	77	80	77	79
Annual Delay					
Total Delay (1000s of person-hours)	3,204	3,004	2,701	2,551	2,234
Rank	75	75	75	74	76
Delay per Peak Traveler (person-hours)	12	11	10	10	9
Rank	75	78	80	79	79
Delay due to Incidents (percent)	55	54	54	54	53
Travel Time Index	1.06	1.05	1.05	1.05	1.04
Rank	82	86	86	81	84
Congestion Cost					
Total Cost (\$ millions)	55	50	43	39	35
Rank	72	74	75	74	76
Cost per Peak Traveler (\$)	202	188	164	155	139
Rank	75	77	80	79	79

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Albany-Schenectady NY, Continued

Inventory Measures	1996	1995	1994	1993	1992
Urban Area Information					
Population (1000s)	495	495	495	490	490
Rank	66	66	65	65	64
Urban Area (square miles)	370	365	365	365	370
Population Density (persons/sq mile)	1,338	1,356	1,356	1,342	1,324
Peak Travelers (1000s)	244	241	238	232	229
Freeway					
Daily Vehicle-Miles of Travel (1000s)	4,850	4,625	4,605	4,520	4,405
Lane-Miles	525	525	525	520	520
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	3,950	3,900	3,800	3,750	3,700
Lane-Miles	1,135	1,135	1,135	1,130	1,130
Public Transportation					
Annual Psgr-Miles of Travel (millions)	46.7	43.9	63.4	55.1	57.2
Annual Unlinked Psgr Trips (millions)	11.8	10.9	12.4	12.0	12.5
Cost Components					
Value of Time (\$/hour)	11.71	11.37	11.06	10.78	10.47
Commercial Cost (\$/hour)	74.17	71.54	69.53	67.77	66.19
Fuel Cost (\$/gallon)	1.37	1.27	1.15	1.21	1.24
System Performance	1996	1995	1994	1993	1992
Congested Travel (% of peak VMT)	12	12	12	11	10
Congested System (% of lane-miles)	26	26	22	22	22
Congested Time (number of "Rush Hours")	2.8	2.7	2.7	2.7	2.6
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	42	45	57	66	67
Transit Riders or Carpoolers (millions)	8	8	10	11	12
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	1,212	1,144	1,114	990	950
Rank	76	75	74	75	74
Fuel per Peak Traveler (gallons)	5	5	5	4	4
Rank	79	79	79	80	81
Annual Delay					
Total Delay (1000s of person-hours)	2,119	1,995	1,960	1,745	1,665
Rank	75	75	72	75	74
Delay per Peak Traveler (person-hours)	9	8	8	8	7
Rank	79	80	80	80	80
Delay due to Incidents (percent)	53	53	54	53	53
Travel Time Index	1.04	1.04	1.04	1.03	1.03
Rank	82	81	80	87	85
Congestion Cost					
Total Cost (\$ millions)	32	30	28	25	23
Rank	76	74	72	71	73
Cost per Peak Traveler (\$)	133	123	119	106	101
Rank	80	80	80	80	80

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

The Mobility Data for Albany-Schenectady NY, Continued

Inventory Measures	1991	1990	1989	1988	1987
Urban Area Information					
Population (1000s)	490	490	490	485	480
Rank	64	63	62	63	63
Urban Area (square miles)	370	375	375	375	370
Population Density (persons/sq mile)	1,324	1,307	1,307	1,293	1,297
Peak Travelers (1000s)	226	223	221	218	214
Freeway					
Daily Vehicle-Miles of Travel (1000s)	4,260	4,160	3,990	3,800	3,645
Lane-Miles	535	530	530	530	530
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	3,500	3,300	3,105	3,000	2,980
Lane-Miles	1,125	1,120	1,115	1,110	1,100
Public Transportation					
Annual Psgr-Miles of Travel (millions)	64.4	57.1	46.7	48.4	52.6
Annual Unlinked Psgr Trips (millions)	12.7	12.4	13.3	13.7	13.6
Cost Components					
Value of Time (\$/hour)	10.17	9.75	9.25	8.83	8.48
Commercial Cost (\$/hour)	64.55	62.47	59.16	56.03	54.62
Fuel Cost (\$/gallon)	1.21	1.07	1.13	1.04	1.05
System Performance	1991	1990	1989	1988	1987
Congested Travel (% of peak VMT)	11	10	9	9	8
Congested System (% of lane-miles)	22	19	19	19	18
Congested Time (number of "Rush Hours")	2.5	2.4	2.4	2.3	2.2
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	75	75	77	81	81
Transit Riders or Carpoolers (millions)	12	12	12	12	11
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	934	878	708	656	565
Rank	72	72	74	73	74
Fuel per Peak Traveler (gallons)	4	4	3	3	3
Rank	77	74	80	75	75
Annual Delay					
Total Delay (1000s of person-hours)	1,646	1,546	1,244	1,157	992
Rank	71	70	74	70	74
Delay per Peak Traveler (person-hours)	7	7	6	5	5
Rank	77	76	76	77	75
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index	1.04	1.03	1.03	1.03	1.02
Rank	73	80	79	75	83
Congestion Cost					
Total Cost (\$ millions)	22	20	15	13	11
Rank	70	69	73	71	73
Cost per Peak Traveler (\$)	97	89	69	62	52
Rank	77	76	79	77	76

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

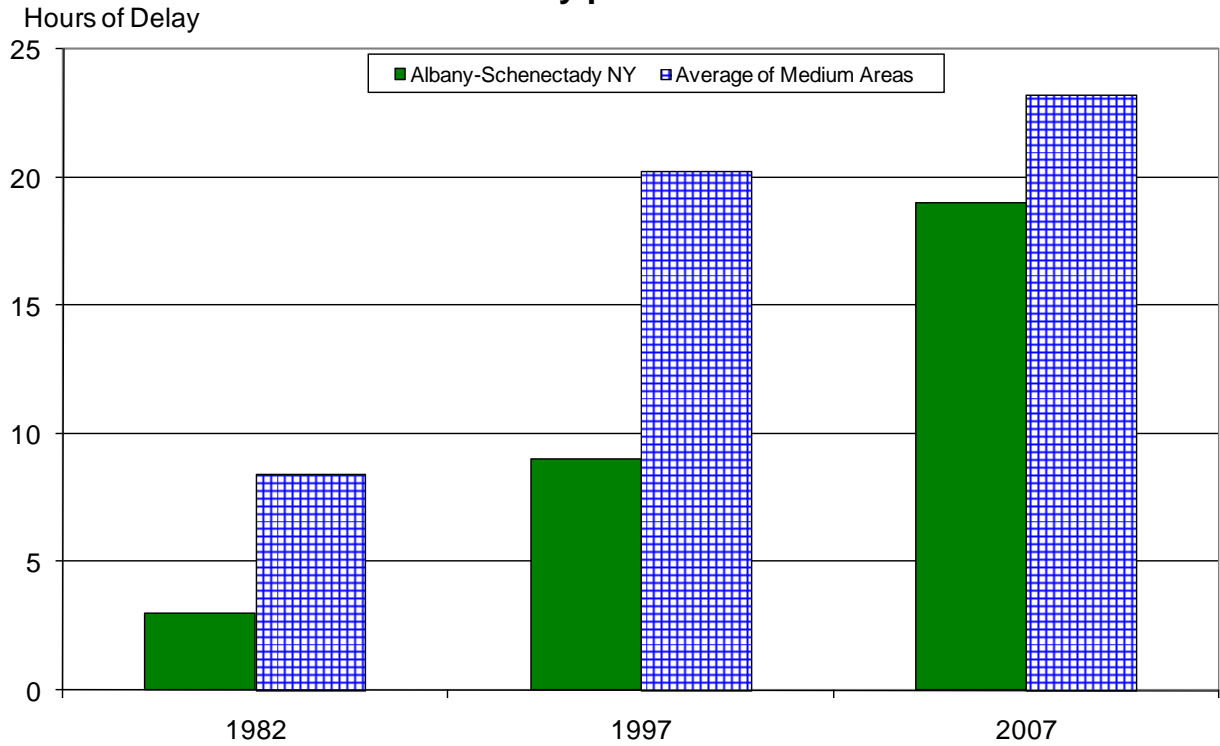
The Mobility Data for Albany-Schenectady NY, Continued

Inventory Measures	1986	1985	1984	1983	1982
Urban Area Information					
Population (1000s)	480	475	475	495	500
Rank	59	58	57	56	53
Urban Area (square miles)	370	365	365	365	360
Population Density (persons/sq mile)	1,297	1,301	1,301	1,356	1,389
Peak Travelers (1000s)	212	209	207	214	214
Freeway					
Daily Vehicle-Miles of Travel (1000s)	3,270	3,040	2,740	2,495	2,450
Lane-Miles	525	525	525	480	465
Arterial Streets					
Daily Vehicle-Miles of Travel (1000s)	2,950	2,920	2,900	2,840	2,750
Lane-Miles	1,090	1,085	1,075	1,070	1,060
Public Transportation					
Annual Psgr-Miles of Travel (millions)	54.4	56.1	79.2	79.2	79.2
Annual Unlinked Psgr Trips (millions)	13.4	16.1	16.9	16.9	16.9
Cost Components					
Value of Time (\$/hour)	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	52.63	55.80	54.65	52.70	52.13
Fuel Cost (\$/gallon)	1.02	1.34	1.35	1.38	1.44
System Performance	1986	1985	1984	1983	1982
Congested Travel (% of peak VMT)	7	7	6	7	7
Congested System (% of lane-miles)	18	15	15	15	15
Congested Time (number of "Rush Hours")	2.1	2.0	2.0	2.0	2.0
Annual Increase Needed to Maintain Constant Congestion Level:					
Lane-miles	--	--	--	--	--
Transit Riders or Carpoolers (millions)	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	511	478	395	373	360
Rank	76	75	74	73	73
Fuel per Peak Traveler (gallons)	2	2	2	2	2
Rank	80	78	73	73	72
Annual Delay					
Total Delay (1000s of person-hours)	899	842	698	656	630
Rank	75	74	73	73	73
Delay per Peak Traveler (person-hours)	4	4	3	3	3
Rank	78	76	79	78	76
Delay due to Incidents (percent)	53	53	53	53	53
Travel Time Index	1.02	1.02	1.02	1.02	1.02
Rank	80	80	76	74	74
Congestion Cost					
Total Cost (\$ millions)	10	9	7	7	7
Rank	71	71	72	71	70
Cost per Peak Traveler (\$)	46	45	36	32	35
Rank	76	77	78	80	76

Note: System Performance statistics for 2000 through 2007 data reflect the effects of operational treatments.

Note: Zeroes in the table reflect values less than 0.5.

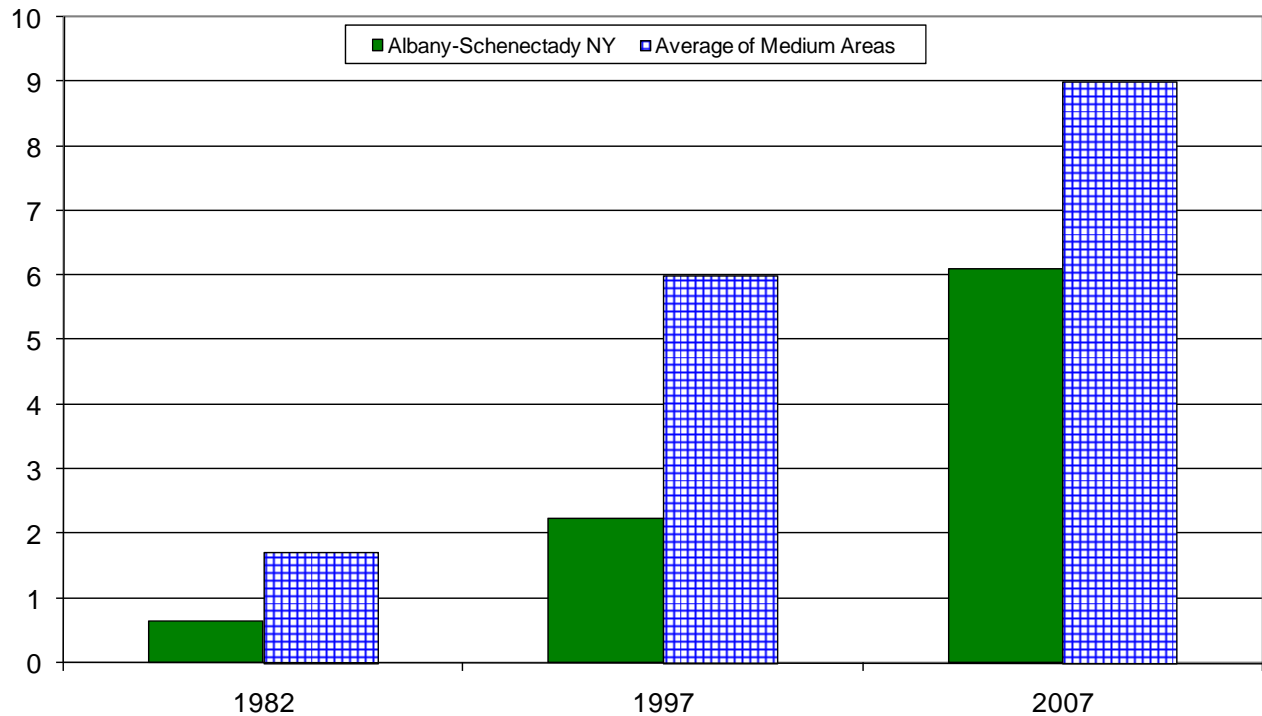
Growth in Delay per Peak Traveler



Note: Medium areas have populations between 0.5 and 1 million

Annual Hours of Delay (millions)

Growth in Total Delay



Note: Medium areas have populations between 0.5 and 1 million

**Benefits from Public Transportation Service and Operations Strategies in
Albany-Schenectady NY**

Operations Strategies	2007	2006	2005	2004
Freeway Ramp Metering				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	41	42	43	44
Service Patrols				
Percent of Roadway Miles	41	42	43	44
Annual Delay Reduction (1000 hours)	102	74	65	62
Arterial Signal Coordination				
Percent of Roadway Miles	51	52	45	45
Annual Delay Reduction (1000 hours)	24	25	21	20
Arterial Access Management				
Percent of Roadway Miles	12	12	12	12
Annual Delay Reduction (1000 hours)	19	17	18	18
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	145	115	105	100
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0
Annual Congestion Cost Savings (\$million)	3.2	2.5	2.1	1.9
Travel Time Index with Strategies	1.096	1.086	1.079	1.078
Travel Time Index (Base)	1.098	1.088	1.081	1.080
Public Transportation Service	2007	2006	2005	2004
Existing Service				
Annual Passenger-miles of travel (million)	47.9	44.9	42.7	53.1
Unlinked Passenger Trips (million)	12.9	12.9	11.8	11.7
Travel Time Index (combined road and transit)	1.097	1.087	1.080	1.078
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.101	1.089	1.082	1.083
Annual Increase				
Delay (1000 hours)	271	199	157	265
Delay per Peak Traveler (hours)	1	1	1	1
Congestion Cost (\$million)	5.8	4.1	3.1	4.9

**Benefits from Public Transportation Service and Operations Strategies in
Albany-Schenectady NY, Continued**

Operations Strategies	2003	2002	2001	2000
Freeway Ramp Metering				
Percent of Roadway Miles	--	--	--	--
Annual Delay Reduction (1000 hours)	--	--	--	--
Freeway Incident Management				
Cameras				
Percent of Roadway Miles	45	41	35	31
Service Patrols				
Percent of Roadway Miles	45	42	42	42
Annual Delay Reduction (1000 hours)	52	27	19	13
Arterial Signal Coordination				
Percent of Roadway Miles	45	26	23	21
Annual Delay Reduction (1000 hours)	19	6	6	4
Arterial Access Management				
Percent of Roadway Miles	12	12	12	12
Annual Delay Reduction (1000 hours)	16	16	8	6
HOV Lanes				
Daily Passenger-miles of travel (1000s)	--	--	--	--
HOV User Delay Savings	--	--	--	--
Total Effect of Operations Treatments				
Annual Delay Reduction (1000 hours)	86	48	33	24
Annual Delay Saved per Peak Traveler (hours)	0	0	0	0
Annual Congestion Cost Savings (\$million)	1.6	0.9	0.6	0.4
Travel Time Index with Strategies	1.070	1.063	1.058	1.054
Travel Time Index (Base)	1.071	1.064	1.058	1.054
Public Transportation Service	2003	2002	2001	2000
Existing Service				
Annual Passenger-miles of travel (million)	53.6	46.9	43.2	40.9
Unlinked Passenger Trips (million)	11.8	12.1	11.7	11.5
Travel Time Index (combined road and transit)	1.070	1.063	1.058	1.054
Condition if Public Transportation Service were Discontinued				
Travel Time Index	1.074	1.068	1.061	1.055
Annual Increase				
Delay (1000 hours)	206	283	218	86
Delay per Peak Traveler (hours)	1	1	1	0
Congestion Cost (\$million)	3.7	5.0	3.8	1.4

**Comparison of Several Key Mobility Performance Measures
Medium Group – 500,000 to 1 million population urban areas**

Urban Area	Delay per Traveler	Travel Time Index	Total Delay	1982 to 2007	
				Delay per Traveler	Total Delay
Nashville-Davidson, TN	H+	0	H+	F	F+
Salt Lake City, UT	H	H+	H+	F	F+
Richmond, VA	L	L-	H	0	F+
Louisville, KY-IN	H+	H+	H+	F+	F+
Hartford, CT	L	L	H	F	F+
Bridgeport-Stamford, CT-NY	H+	H+	H+	F+	F+
Oklahoma City, OK	H	L	H+	F+	F+
Tulsa, OK	0	L	0	0	F
Tucson, AZ	H+	H+	H+	F	F+
Dayton, OH	L-	L-	L-	S-	S-
Rochester, NY	L-	L-	L-	S-	S-
Birmingham, AL	H+	0	H+	F+	F+
Lancaster-Palmdale, CA	L-	L	L-	S-	S-
Honolulu, HI	H	H+	H	S	S
El Paso, TX-NM	L	L	L	0	S
Oxnard-Ventura, CA	H+	H+	H+	F+	F+
Sarasota-Bradenton, FL	H	H+	0	S-	0
Springfield, MA-CT	L-	L-	L-	S-	S-
Omaha, NE-IA	H	H	0	F+	F
Fresno, CA	L	0	L	S-	S-
Allentown-Bethlehem, PA-NJ	0	0	L	S	S-
Akron, OH	L-	L-	L-	S-	S-
Grand Rapids, MI	0	L	L	0	S
Albany-Schenectady, NY	L	L	L	0	S-
Albuquerque, NM	H+	H	H	F+	F+
New Haven, CT	L	L	L-	0	S-
Indio-Cathedral City-Palm Springs, CA	L-	0	L-	S-	S-
Toledo, OH-MI	L-	L-	L-	S	S-
Poughkeepsie-Newburgh, NY	L-	L-	L-	S-	S-
Bakersfield, CA	L-	L-	L-	S-	S-
Colorado Springs, CO	0	0	L	F	S-

0 – Average congestion levels or average congestion growth

H Higher congestion; H+ Much higher congestion; F Faster congestion growth; F+ Much faster growth
L Lower congestion; L- Much lower congestion; S Slower congestion growth; S- Much slower growth

Key Mobility Performance Measure Labels

Note: Designation of an urban area congestion problem as “Much higher”, “Much faster growth”, etc. is determined using a general indicator of the accuracy of the congestion estimates. For regions with the same indicator label, there may be no difference in congestion levels. Different values are used for the indicators in regions over 1 million population and below 1 million population.

Measures	Differences Within These Values May Not Indicate a Difference in Congestion Level	
	Above 1M Population	Below 1M Population
2007 Values Delay per Traveler - Travel Time Index - Total Delay -	Above 1M Population 5 Hours 5 Index Points 5 Hours x Average Population	Below 1M Population 3 Hours 3 Index Points 3 Hours x Average Population
1982 to 2007 Trends Delay per Traveler - Total Delay -	5 Hours 5 Hours x Average Population	3 Hours 3 Hours x Average Population