

Appendix 9.18

TERMs

TERMs (Transportation Emission Reduction Measures)

Programs to achieve reductions in mobile source emission reductions have been characterized in numerous ways such as TCMs (Transportation Control Measures), TSM (transportation systems management), TDM (travel demand management) and others. TERMs are projects that are either TCMs or VMEPs (Voluntary Mobile Source Emissions Reduction Program).

The term TCM combines elements of (TSM) and transportation demand management (TDM). Broadly, TSMs are programs that seek to increase the efficiency of existing transportation facilities and would typically include measures such as parking management, traffic flow improvements, HOV lanes or park-and-ride lots. Frequently, TSM projects will assist TDMs, which seek to manage and reduce travel demand by increasing carpooling, vanpooling, telecommuting, compressed work weeks and similar programs. There is much overlap between the two terms; clearly providing park and ride lots will help encourage carpooling, for example.

The term TCM refers to transportation control measures. Sixteen broad categories of TCMs are listed in section 108f of the Clean Air Act. Examples include programs for improved public transit; restriction of certain lanes for HOVs; traffic flow improvement programs, employer-based transportation management plans, and others. Broadly, TCMs are measures that reduce vehicle use or change traffic flow in ways that reduce emissions. Measures aimed at controlling the emission *rates* of vehicles, such as tailpipe standards, inspection and maintenance requirements, or clean fuel technologies are not considered TCMs.

The *Texas Guide to Accepted Mobile Source Emission Reduction Strategies* (TTI, 2003), more commonly known as MOSERs, suggests a new term to encompass TCMs and VMEPs: TERM. It makes a clear distinction between TCMs and VMEP, saying that TERMs encompass both.

H-GAC has been implementing a number of programs as VMEP for some time, such as the Clean Cities Program, Scrappage program and others. In 2004, more than 1,500 traffic signals were improved and optimized in Harris County. These programs have resulted in significantly reduced congestion and travel times. Traffic flow improvements, such as traffic signalization programs, are listed as TCMs in the Clean Air Act and are considered TERMs distinct from the VMEP program.

Emission Reductions from the 2004 Traffic Signalization Program

The attached tables present a list of 1,540 traffic signalization projects in Harris County that were completed in 2004. The total emission reductions resulting from these projects vary by year. The emission reductions are a result of increased speeds and lowered congestion at the affected intersections and along the affected corridors.

The reductions were estimated by obtaining the average daily traffic volumes along the corridors affected by the improvements from the City of Houston. Lengths of the affected

corridors, links and intersections were estimated using GIS information maintained by H-GAC. Average daily volumes were multiplied by corridor lengths to obtain affected VMT. The volumes were assumed to be the same for every year since these volumes are observed volumes, and there is no data upon which to base estimates of altered volumes that could result from changes in speed.

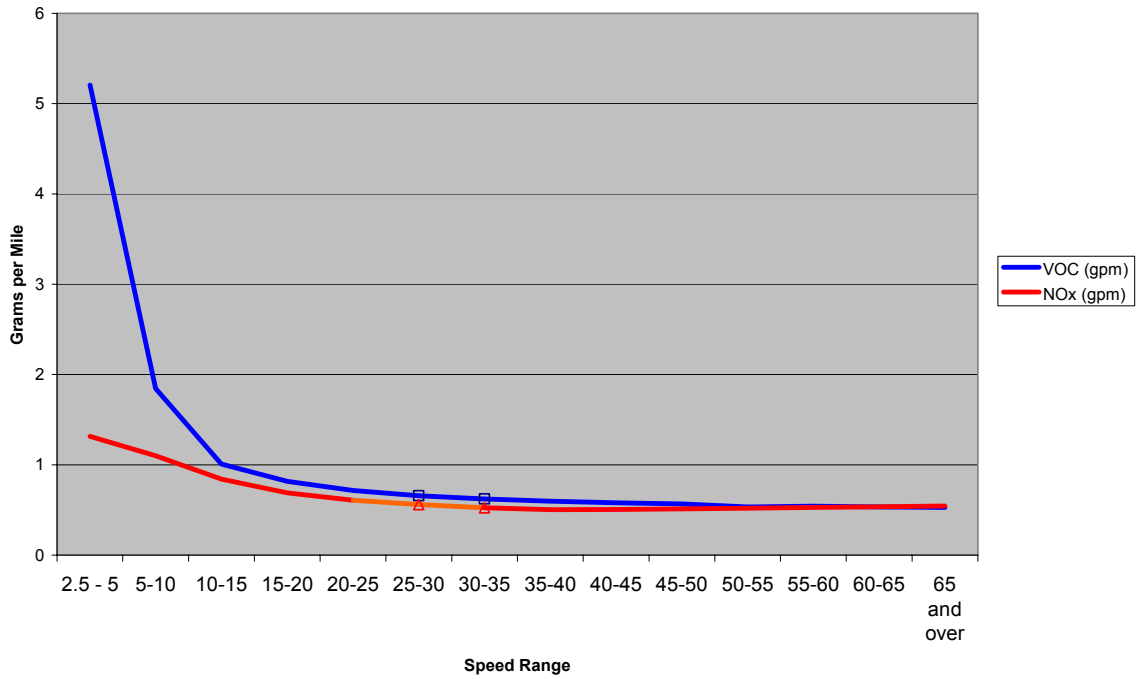
The MOSERs (TTI, 2003) methodology for traffic signalization improvements along corridors documented on page B.7.5 was applied to estimate emission reductions. However, the emission factors listed in MOSERs were substituted for more recently developed emission factors for Harris County using the MOBILE6 model. Factors representative of light-duty gasoline vehicles traveling on major arterials were used. Emission factors for other vehicle classes are higher and the use of light-duty vehicle factors alone lent conservatism to the analysis, since higher emission factors would lead to higher estimates of emission reductions. Please note, that if 2005 emission factors had been used for 2007, a higher emission reduction estimate of 0.448 and 0.356 instead of 0.379 and 0.327 would have gotten.

The MOSERs guide presented an example traffic signalization calculation on page A.11.6 that used emission factors for before speeds of 28 mph and after speeds of 33 mph. A review of some before-and-after speed studies of signalization projects performed for the City of Houston showed that speed improvements of 25-30 mph were somewhat typical. A speed improvement of 25-30 mph is consistent with H-GAC's long-standing approach to estimating traffic signalization improvements and other field experience that a roughly 20 percent improvement in speed would be a typical effect of a signalization project. Therefore, emission factors representative of 25 and 30 mph were used to evaluate the emission reductions associated with these projects.

Speed and Emission Factors

The reason emissions can change even when miles traveled does not is that emissions vary by the travel speed of the vehicle. The figure on the next page shows how emissions vary with differing travel speeds. It can be seen that VOC emissions per mile for light-duty vehicles decrease with higher speeds, although after 15-20 mph, the change is subtle. NOx emissions per mile decrease with increasing speeds until speeds at or above 50 mph. At higher speeds they increase, although the increase predicted by the MOBILE6 model is almost invisible. Since traffic signalization projects tend to increase speeds, they decrease emissions per mile traveled. Projects that increase highly congested speeds where vehicles are initially traveling 5-15 mph and can subsequently travel at 20 or more miles per hour would experience dramatic decreases in emissions. For example, if all before-signalization speeds are 15 miles per hour and all after-signalization speeds are 20 mph, VOC emissions would decrease by 1.06 tons per day and NOx would decrease by 1.37 tons per day. However, based on available data and the desire to express reductions in conservative terms, more representative speed changes were considered.

Emission Factors by Travel Speed for Light Duty Vehicles



References

TTI, 2003. *The Texas Guide to Accepted Mobile Source Emission Reduction Strategies*. Prepared by the Texas Transportation Institute in cooperation with the Texas Department of Transportation, and in association with the Environmental Protection Agency, the Federal Highway Administration, the Federal Transit Administration and the Texas Commission on Environmental Quality. August 2003.

Arterial / Area	Project Description	Affected Traffic Signals	24-Hr Volumes	Lanes	Volume per lane	Length	VOC Reduction (tpd)	NOx Reduction (tpd)	Notes	
Downtown	Downtown - Install/Repair Interconnect Cable	200	na	na	na				Emission estimates are prepared by multiplying the VMT by the difference in emission factors resulting from a 20 percent increase in travel speeds from 25 mph to 30 mph. For conservatism, emission factors are for light duty gas vehicles in 2007 only. The before VOC factor is 0.6579 grams per mile and the after factor is 0.6221 grams per mile. The before NOx factor is 0.5580 grams per mile and the after factor is 0.5233 grams per mile. The before and after speeds are representative of typical observed before and after speeds as measured by the City of Houston for some of these intersections.	
Downtown	Downtown - East of Austin St. Install/Repair Interconnect Cable	85	na	na	na					
Midtown	Midtown - East/West Timing	30	na	na	na					
Midtown	Midtown - Install/Repair Interconnect Cable	na	na	na	na					
		315								
Bellaire	COH - RCTSS Optimized Timing	16	54,000	6	9,000	8.92	0.019	0.018	In Sections: SH6 to Willcrest 4.3 miles / Beltway 8 to Hillcroft 3.8 miles	
Gulfton		7	41,500	4	10,375	1.80	0.003	0.003		
Woodway		11	31,000	4	7,750	3.15	0.004	0.004		
Hillcroft / Voss		19	37,500	4	9,375	7.25	0.011	0.010		
Fondren		23	33,000	6	5,500	8.35	0.011	0.011		
Montgomery		8	35,500	4	8,875	4.55	0.006	0.006		
San Felipe		12	42,000	6	7,000	2.52	0.004	0.004		
Harrisburg		13	20,000	4	5,000	3.82	0.003	0.003		
Fountainview / Renwick		14	40,500	4	10,125	4.95	0.008	0.008		
S. Post Oak		13	45,000	6	7,500	4.85	0.009	0.008		
Chimney Rock		17	40,500	4	10,125	4.45	0.007	0.007		
Crosstimbers		20	30,500	4	7,625	6.75	0.008	0.008		
Westheimer		27	67,000	8	8,375	16.30	0.043	0.042		In Sections: To BW8 5.5 miles / BW8 to IH610 6 miles / IH610 to Elgin 4.8 miles
			200							
Richmond	Spur 527 Mitigation Area Timing		40,000	4	10,000	5.200	0.008	0.008		
Westheimer			34,000	4	8,500	4.800	0.006	0.006		
West Park			48,000	4	12,000	2.500	0.005	0.005		
West Alabama			15,000	2	7,500	3.580	0.002	0.002		
Bissonett			35,000	2	17,500	0.975	0.001	0.001		
		99								
N. Cullen	COH - CMAQ WA # 2 (PBS&J)	6	22,000	4	5,500	1.60	0.001	0.001		
Airport		5	32,000	6	5,333	4.05	0.005	0.005		
McCarty / Beaumont		7	37,000	6	6,167	4.65	0.007	0.007		
Bissonnet / Braeswood		31	35,000	6	5,833	10.50	0.014	0.014		
El Camino Real		6	25,000	4	6,250	4.45	0.004	0.004		
		55						0.000		
N. Shepherd	COH - CMAQ WA # 2 (KLOTZ)	15	35,000	6	5,833	4.64	0.006	0.006		
S. Shepherd		14	37,000	4	9,250	2.35	0.003	0.003		
Antoine		9	34,000	4	8,500	4.45	0.006	0.006		
Ella		5	26,500	4	6,625	1.55	0.002	0.002		
Longpoint		12	23,000	4	5,750	2.15	0.002	0.002		
N. Gessner		12	33,000	6	5,500	3.85	0.005	0.005		
Aldine-Bender		2	22,000	6	3,667	1.05	0.001	0.001		
Barryknoll		2		2	0	0.85	0.000	0.000		
			71							
		126								
Barker Cypress	COH - RCTSS Optimized Timing	2	55,500	4	13,875	0.85	0.002	0.002		
Waugh / Commonwealth		9	27,000	4	6,750	1.25	0.001	0.001		
Shepherd / Durham		17	37,000	4	9,250	3.55	0.005	0.005		
Almeda		7	27,000	6	4,500	4.55	0.005	0.005		
Federal		8	32,500	4	8,125	1.50	0.002	0.002		
Wheeler		8	10,000	4	2,500	2.65	0.001	0.001		
Airline		22	19,000	4	4,750	5.00	0.004	0.004		
Bellfort		36	38,000	6	6,333	18.15	0.027	0.026		
W. Gray		9	40,000	8	5,000	2.00	0.003	0.003		
Allen Pkwy		4				1.50	0.000	0.000		
Broadway		18	26,500	6	4,417	4.95	0.005	0.005		
Navigation		11	17,500	6	2,917	4.70	0.003	0.003		
Wayside		18	34,500	4	8,625	3.85	0.005	0.005		
S. Gessner		19	28,000	6	4,667	7.45	0.008	0.008		
Lockwood		29	20,000	6	3,333	8.60	0.007	0.007		
Almeda-Genoa		8	20,000	4	5,000	2.25	0.002	0.002		
			225							

2007 AD

Arterial / Area	Project Description	Affected Traffic Signals	24- Hr Volumes	Lanes	Volume per lane	Length	VOC Reduction (tpd)	NOx Reduction (tpd)	Notes
N. Victory	COH - WA # 2 (KLOTZ)	7				3.7	0.000	0.000	
W. Little York		10				3.9	0.000	0.000	
Galveston		18				10.85	0.000	0.000	
Mykawa		5	12,000	4	3,000	2.1	0.001	0.001	
Hammerly		14	22,000	4	5,500	5.8	0.005	0.005	
Kempwood		19				9.25	0.000	0.000	
Studewood		10				3.15	0.000	0.000	
Yale		15	18,000	4	4,500	4.82	0.003	0.003	
Heights		8	15,000	4	3,750	2.15	0.001	0.001	
Irvington		13	17,000	4	4,250	4.45	0.003	0.003	
Jensen		13	12,000	4	3,000	6.5	0.003	0.003	
Lyons		12	10,000	2	5,000	1.75	0.001	0.001	
Elysian		12				2	0.000	0.000	
Hirsch		15	10,000	4	2,500	6.65	0.003	0.003	
Mesa		6				2.8	0.000	0.000	
Wallisville		8				4.55	0.000	0.000	
Hempstead		18				8.5	0.000	0.000	
Will Clayton		5	31,500	4	7,875	3.1	0.004	0.004	
W. Tidwell		17				7.8	0.000	0.000	
			225					0.000	0.000
Bissonnet	COH - WA # 2 (BROWN & GAY)	9	35,000	4	8,750	4.15	0.006	0.006	
Westview		5				4.25	0.000	0.000	
Beechnut		9	34,500	4	8,625	10	0.014	0.013	
Beechnut 2		14	12,000	4	3,000	?	0.000	0.000	Not on map, so zero credit taken for conservatism.
Stella Link		8	12,000	4	3,000	2	0.001	0.001	
Memorial		7	40,000	6	6,667	2.3	0.004	0.004	
Washington		10	20,000	4	5,000	3.1	0.002	0.002	
S. Cullen		12	21,000	4	5,250	4.55	0.004	0.004	
Scott		22	18,000	6	3,000	6.95	0.005	0.005	
Fuqua		5	10,000	4	2,500	1.45	0.001	0.001	
W. Fuqua		5	10,000	4	2,500	2.95	0.001	0.001	
Telephone		22	27,000	6	4,500	7.6	0.008	0.008	
Griggs		14	46,500	6	7,750	3.32	0.006	0.006	
MLK		15	25,000	4	6,250	5.8	0.006	0.006	
Dowling		19				3	0.000	0.000	
S. Main		21				13.25	0.000	0.000	
Clay		10				4.8	0.000	0.000	
Clinton		10				5.2	0.000	0.000	
Market		8				2.55	0.000	0.000	
			225					0.000	0.000
		450					0.000	0.000	
TMC	TEXAS MEDICAL CENTER (TMC)	90	na				0.000	0.000	
	COH - Optimized Timing						0.000	0.000	
							0.000	0.000	
		90					0.000	0.000	
Uptown	UPTOWN	35	na				0.000	0.000	
	50% COH funded						0.000	0.000	
	50% Uptown Management funded						0.000	0.000	
		35					0.000	0.000	
		1540					0.377	0.366	

2005 ROP

Arterial / Area	Project Description	Affected Traffic Signals	24- Hr Volumes	Lanes	Volume per lane	Length	VOC Reduction (tpd)	Nox Reduction (tpd)	Notes
N. Victory	COH - WA # 2 (KLOTZ)	7				3.70	0.000	0.000	
W. Little York		10				3.90	0.000	0.000	
Galveston		18				10.85	0.000	0.000	
Mykawa		5	12,000	4	3,000	2.10	0.001	0.000	
Hammerly		14	22,000	4	5,500	5.80	0.006	0.000	
Kempwood		19				9.25	0.000	0.000	
Studewood		10				3.15	0.000	0.000	
Yale		15	18,000	4	4,500	4.82	0.004	0.000	
Heights		8	15,000	4	3,750	2.15	0.002	0.000	
Irvington		13	17,000	4	4,250	4.45	0.004	0.000	
Jensen		13	12,000	4	3,000	6.50	0.004	0.000	
Lyons		12	10,000	2	5,000	1.75	0.001	0.000	
Elysian		12				2.00	0.000	0.000	
Hirsch		15	10,000	4	2,500	6.65	0.003	0.000	
Mesa		6				2.80	0.000	0.000	
Wallisville		8				4.55	0.000	0.000	
Hempstead		18				8.50	0.000	0.000	
Will Clayton	5	31,500	4	7,875	3.10	0.005	0.000		
W. Tidwell	17				7.80	0.000	0.000		
		225							
Bissonnet	COH - WA # 2 (BROWN & GAY)	9	35,000	4	8,750	4.15	0.007	0.000	
Westview		5				4.25	0.000	0.000	
Beechnut		9	34,500	4	8,625	10.00	0.016	0.000	
Beechnut 2		14	12,000	4	3,000	?	0.000	0.000	Not on mapm so zero credit taken for conservatism.
Stella Link		8	12,000	4	3,000	2.00	0.001	0.000	
Memorial		7	40,000	6	6,667	2.30	0.004	0.000	
Washington		10	20,000	4	5,000	3.10	0.003	0.000	
S. Cullen		12	21,000	4	5,250	4.55	0.004	0.000	
Scott		22	18,000	6	3,000	6.95	0.006	0.000	
Fuqua		5	10,000	4	2,500	1.45	0.001	0.000	
W. Fuqua		5	10,000	4	2,500	2.95	0.001	0.000	
Telephone		22	27,000	6	4,500	7.60	0.010	0.000	
Griggs		14	46,500	6	7,750	3.32	0.007	0.000	
MLK		15	25,000	4	6,250	5.80	0.007	0.000	
Dowling		19				3.00	0.000	0.000	
S. Main		21				13.25	0.000	0.000	
Clay		10				4.80	0.000	0.000	
Clinton	10				5.20	0.000	0.000		
Market	8				2.55	0.000	0.000		
		225							
		450							
TMC	TEXAS MEDICAL CENTER (TMC)	90	na				0.000	0.000	
	COH - Optimized Timing						0.000	0.000	
		90							
Uptown	UPTOWN	35	na				0.000	0.000	
	50% COH funded						0.000	0.000	
	50% Uptown Management funded						0.000	0.000	
		35							
		1540					0.448	0.356	

2007 ROP

Arterial / Area	Project Description	Affected Traffic Signals	24-Hr Volumes	Lanes	Volume per lane	Length	VOC Reduction (tpd)	Nox Reduction (tpd)	Notes	
Downtown	Downtown - Install/Repair Interconnect Cable	200	na	na	na				Emission estimates are prepared by multiplying the VMT by the difference in emission factors resulting from a 20 percent increase in travel speeds from 25 mph to 30 mph. For conservatism, emission factors are for light duty gas vehicles in 2007 only. The before VOC factor is 0.658 grams per mile and the after factor is 0.622 grams per mile. The before Nox factor is 0.558 grams per mile and the after factor is 0.523 grams per mile. The before and after speeds are representative of typical observed before and after speeds as measured by the City of Houston for some of these intersections.	
Downtown	Downtown - East of Austin St. Install/Repair Interconnect Cable	85	na	na	na					
Midtown	Midtown - East/West Timing	30	na	na	na					
Midtown	Midtown - Install/Repair Interconnect Cable	na	na	na	na					
		315								
Bellaire	COH - RCTSS Optimized Timing	16	54,000	6	9,000	8.92	0.019	0.016	In Sections: SH6 to Willcrest 4.3 mi./BW8 to Hillcroft 3.8 mi.	
Gulfton		7	41,500	4	10,375	1.80	0.003	0.003		
Woodway		11	31,000	4	7,750	3.15	0.004	0.003		
Hillcroft / Voss		19	37,500	4	9,375	7.25	0.011	0.009		
Fondren		23	33,000	6	5,500	8.35	0.011	0.009		
Montgomery		8	35,500	4	8,875	4.55	0.006	0.006		
San Felipe		12	42,000	6	7,000	2.52	0.004	0.004		
Harrisburg		13	20,000	4	5,000	3.82	0.003	0.003		
Fountainview / Renwick		14	40,500	4	10,125	4.95	0.008	0.007		
S. Post Oak		13	45,000	6	7,500	4.85	0.009	0.007		
Chimney Rock		17	40,500	4	10,125	4.45	0.007	0.006		
Crosstimbers		20	30,500	4	7,625	6.75	0.008	0.007		
Westheimer		27	67,000	8	8,375	16.30	0.043	0.037		In Sections: To BW8 5.5 mi./BW8 to I-610 6 mi./I-610 to Elgin 4.8 mi.
			200							
Richmond		Spur 527 Mitigation Area Timing		40,000	4	10,000	5.200	0.008		0.007
Westheimer			34,000	4	8,500	4.800	0.006	0.006		
West Park			48,000	4	12,000	2.500	0.005	0.004		
West Alabama			15,000	2	7,500	3.580	0.002	0.002		
Bissonett			35,000	2	17,500	0.975	0.001	0.001		
		99								
N. Cullen	COH - CMAQ WA # 2 (PBS&J)	6	22,000	4	5,500	1.60	0.001	0.001		
Airport		5	32,000	6	5,333	4.05	0.005	0.004		
McCarty / Beaumont		7	37,000	6	6,167	4.65	0.007	0.006		
Bissonnet / Braeswood		31	35,000	6	5,833	10.50	0.015	0.013		
El Camino Real		6	25,000	4	6,250	4.45	0.004	0.004		
		55								
N. Shepherd	COH - CMAQ WA # 2 (KLOTZ)	15	35,000	6	5,833	4.64	0.006	0.006		
S. Shepherd		14	37,000	4	9,250	2.35	0.003	0.003		
Antoine		9	34,000	4	8,500	4.45	0.006	0.005		
Ella		5	26,500	4	6,625	1.55	0.002	0.001		
Longpoint		12	23,000	4	5,750	2.15	0.002	0.002		
N. Gessner		12	33,000	6	5,500	3.85	0.005	0.004		
Aldine-Bender		2	22,000	6	3,667	1.05	0.001	0.001		
Barryknoll		2		2	0	0.85	0.000	0.000		
			71							
			126							
Barker Cypress	COH - RCTSS Optimized Timing	2	55,500	4	13,875	0.85	0.002	0.002		
Waugh / Commonwealth		9	27,000	4	6,750	1.25	0.001	0.001		
Shepherd / Durham		17	37,000	4	9,250	3.55	0.005	0.004		
Alameda		7	27,000	6	4,500	4.55	0.005	0.004		
Federal		8	32,500	4	8,125	1.50	0.002	0.002		
Wheeler		8	10,000	4	2,500	2.65	0.001	0.001		
Airline		22	19,000	4	4,750	5.00	0.004	0.003		
Bellfort		36	38,000	6	6,333	18.15	0.027	0.024		
W. Gray		9	40,000	8	5,000	2.00	0.003	0.003		
Allen Pkwy		4				1.50	0.000	0.000		
Broadway		18	26,500	6	4,417	4.95	0.005	0.004		
Navigation		11	17,500	6	2,917	4.70	0.003	0.003		
Wayside		18	34,500	4	8,625	3.85	0.005	0.005		
S. Gessner		19	28,000	6	4,667	7.45	0.008	0.007		
Lockwood		29	20,000	6	3,333	8.60	0.007	0.006		
Alameda-Genoa		8	20,000	4	5,000	2.25	0.002	0.002		
			225							

2007 ROP

Arterial / Area	Project Description	Affected Traffic Signals	24-Hr Volumes	No. of Lanes	Volume per lane	Length			Notes
N. Victory	COH - WA # 2 (KLOTZ)	7				3.70	0.000	0.000	
W. Little York		10				3.90	0.000	0.000	
Galveston		18				10.85	0.000	0.000	
Mykawa		5	12,000	4	3,000	2.10	0.001	0.001	
Hammerly		14	22,000	4	5,500	5.80	0.005	0.004	
Kempwood		19				9.25	0.000	0.000	
Studewood		10				3.15	0.000	0.000	
Yale		15	18,000	4	4,500	4.82	0.003	0.003	
Heights		8	15,000	4	3,750	2.15	0.001	0.001	
Irvington		13	17,000	4	4,250	4.45	0.003	0.003	
Jensen		13	12,000	4	3,000	6.50	0.003	0.003	
Lyons		12	10,000	2	5,000	1.75	0.001	0.001	
Elysian		12				2.00	0.000	0.000	
Hirsch		15	10,000	4	2,500	6.65	0.003	0.002	
Mesa		6				2.80	0.000	0.000	
Wallisville		8				4.55	0.000	0.000	
Hempstead		18				8.50	0.000	0.000	
Will Clayton		5	31,500	4	7,875	3.10	0.004	0.003	
W. Tidwell		17				7.80	0.000	0.000	
			225						
Bissonnet	COH - WA # 2 (BROWN & GAY)	9	35,000	4	8,750	4.15	0.006	0.005	
Westview		5				4.25	0.000	0.000	
Beechnut		9	34,500	4	8,625	10.00	0.014	0.012	
Beechnut 2		14	12,000	4	3,000	?	0.000	0.000	Not on map, so zero credit taken for conservatism.
Stella Link		8	12,000	4	3,000	2.00	0.001	0.001	
Memorial		7	40,000	6	6,667	2.30	0.004	0.003	
Washington		10	20,000	4	5,000	3.10	0.002	0.002	
S. Cullen		12	21,000	4	5,250	4.55	0.004	0.003	
Scott		22	18,000	6	3,000	6.95	0.005	0.004	
Fuqua		5	10,000	4	2,500	1.45	0.001	0.000	
W. Fuqua		5	10,000	4	2,500	2.95	0.001	0.001	
Telephone		22	27,000	6	4,500	7.60	0.008	0.007	
Griggs		14	46,500	6	7,750	3.32	0.006	0.005	
MLK		15	25,000	4	6,250	5.80	0.006	0.005	
Dowling		19				3.00	0.000	0.000	
S. Main		21				13.25	0.000	0.000	
Clay		10				4.80	0.000	0.000	
Clinton		10				5.20	0.000	0.000	
Market		8				2.55	0.000	0.000	
			225						
		450							
TMC	TEXAS MEDICAL CENTER (TMC)	90	na				0.000	0.000	
	COH - Optimized Timing						0.000	0.000	
		90							
Uptown	UPTOWN	35	na				0.000	0.000	
	50% COH funded						0.000	0.000	
	50% Uptown Management funded						0.000	0.000	
		35							
		1540					0.379	0.327	



CITY OF HOUSTON

Public Works and Engineering Department

Bill White

Mayor

Michael S. Marcotte, P.E., DEE
Director
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March 18, 2005

Mr. Alan Clark
Director of Transportation
Houston-Galveston Area Council
P. O. Box 22777
Houston, Tx 77227

Dear Mr. Clark:

Enclosed is a list of traffic signal locations that have been retimed and coordinated by the City of Houston in 2004 as part of the City's comprehensive signal retiming program to improve mobility and air quality.

Please advise if you need additional information.

Sincerely,

Hugo A. Malanga, P.E.
Deputy Director
Traffic and Transportation Division

HAM:mn

c: David Worley

**City of Houston Traffic Signal Timing Optimization Plan
Begin January 2004 - Complete January 2005**

Color Code	Phase	Arterial / Area	Project Description	Affected Traffic Signals	Implementation Schedule	Stage*
A	I-A	Downtown	Downtown - Install/Repair Interconnect Cable	200	May 1, 2004	Complete
	I-B	Downtown	Downtown - East of Austin St. Install/Repair Interconnect Cable	85	May 1, 2004	Complete
B	II-A	Midtown	Midtown - East/West Timing	30	January 15, 2004	Complete
	II-B	Midtown	Midtown - Install/Repair Interconnect Cable	na	May 1, 2004	Complete
Subtotal				315		
Orange	III - A	Bellaire	COH - RCTSS Optimized Timing	16	February 15, 2004	Complete
	III - B	Gulfton		7	March 1, 2004	Complete
	III - C	Woodway		11	March 15, 2004	Complete
	III - D	Hillcroft / Voss		19	April 1, 2004	Complete
	III - E	Fondren		23	April 15, 2004	Complete
	III - F	Montgomery		8	May 1, 2004	Complete
	III - G	San Felipe		12	May 15, 2004	Complete
	III - H	Harrisburg		13	June 1, 2004	Complete
	III - I	Fountainview / Renwick		14	June 15, 2004	Complete
	III - J	S. Post Oak		13	July 1, 2004	Complete
	III - K	Chimney Rock		17	July 15, 2004	Complete
	III - L	Crosstimbers		20	August 1, 2004	Complete
	III - M	Westheimer		27	August 15, 2004	Complete
Subtotal				200		
Green	IV - A	Richmond	Spur 527 Mitigation Area Timing		February 13, 2004	Complete
	IV - B	Westheimer			February 13, 2004	Complete
	IV - C	West Park			February 13, 2004	Complete
	IV - D	West Alabama			February 13, 2004	Complete
	IV - E	Bissonett			February 13, 2004	Complete
Subtotal				99		
Purple	V - A	N. Cullen	COH - CMAQ WA # 2 (PBS&J)	6	February 15, 2004	Complete
	V - B	Airport		5	March 1, 2004	Complete
	V - C	McCarty / Beaumont		7	March 15, 2004	Complete
	V - D	Bissonnet / Braeswood		31	April 1, 2004	Complete
	V - E	El Camino Real		6	April 15, 2004	Complete
				55		
	V - F	N. Shepherd	COH - CMAQ WA # 2 (KLOTZ)	15	February 15, 2004	Complete
	V - G	S. Shepherd		14	March 1, 2004	Complete
	V - H	Antoine		9	March 15, 2004	Complete
	V - I	Ella		5	April 1, 2004	Complete
	V - J	Longpoint		12	May 1, 2004	Complete
	V - K	N. Gessner		12	May 15, 2004	Complete
	V - L	Aldine-Bender		2	June 1, 2004	Complete
	V - M	Barryknoll		2	June 15, 2004	Complete
				71		
Subtotal				126		
Orange	VI	Barker Cypress	COH - RCTSS Optimized Timing	2	May 15, 2004	Complete
	VI	Waugh / Commonwealth		9	June 1, 2004	Complete
	VI	Shepherd / Durham		17	June 15, 2004	Complete
	VI	Almeda		7	July 1, 2004	Complete
	VI	Federal		8	July 15, 2004	Complete
	VI	Wheeler		8	August 1, 2004	Complete
	VI	Airline		22	August 15, 2004	Complete
	VI	Belfort		36	September 1, 2004	Complete
	VI	W. Gray		9	September 15, 2004	Complete
	VI	Allen Pkwy		4	September 15, 2004	Complete
	VI	Broadway		18	October 1, 2004	Complete
	VI	Navigation		11	November 1, 2004	Complete
	VI	Wayside		18	November 15, 2004	Complete
	VI	S. Gessner		19	December 1, 2004	Complete
	VI	Lockwood		29	December 15, 2004	Complete
	VI	Almeda-Genoa		8	December 31, 2004	Complete
	Subtotal				225	

**City of Houston Traffic Signal Timing Optimization Plan
Begin January 2004 - Complete January 2005**

Color	Phase	Arterial / Area	Project Description	Affected	Implementation	Stage*		
Purple	VII	N. Victory	COH - WA # 2 (KLOTZ)	7	June 1, 2004	Complete		
	VII	W. Little York		10	June 15, 2004	Complete		
	VII	Galveston		18	July 1, 2004	Complete		
	VII	Mykawa		5	July 1, 2004	Complete		
	VII	Hammerly		14	July 15, 2004	Complete		
	VII	Kempwood		19	August 1, 2004	Complete		
	VII	Studewood		10	August 1, 2004	Complete		
	VII	Yale		15	August 15, 2004	Complete		
	VII	Heights		8	August 15, 2004	Complete		
	VII	Irvington		13	September 1, 2004	Complete		
	VII	Jensen		13	September 15, 2004	Complete		
	VII	Lyons		12	October 1, 2004	Complete		
	VII	Elysian		12	October 1, 2004	Complete		
	VII	Hirsch		15	October 15, 2004	Complete		
	VII	Mesa		6	November 1, 2004	Complete		
	VII	Wallisville		8	November 1, 2004	Complete		
	VII	Hempstead		18	November 15, 2004	Complete		
	VII	Will Clayton		5	December 1, 2004	Complete		
	VII	W. Tidwell		17	December 15, 2004	Complete		
						225		
	Purple	VIII		Bissonnet	COH - WA # 2 (BROWN & GAY)	9	May 1, 2004	Complete
		VIII		Westview		5	May 15, 2004	Complete
		VIII	Telephone	22		June 1, 2004	Complete	
		VIII	Griggs	14		June 15, 2004	Complete	
		VIII	S. Main	21		July 1, 2004	Complete	
		VIII	Scott	22		July 15, 2004	Complete	
		VIII	S. Cullen	12		July 15, 2004	Complete	
		VIII	MLK	15		August 1, 2004	Complete	
		VIII	Dowling	19		August 15, 2004	Complete	
		VIII	Beechnut 2	14		September 1, 2004	Complete	
		VIII	Beechnut	9		September 15, 2004	Complete	
		VIII	Fuqua	5		October 1, 2004	Complete	
		VIII	W. Fuqua	5		October 1, 2004	Complete	
		VIII	Stella Link	8		October 15, 2004	Complete	
		VIII	Clay	10		November 1, 2004	Complete	
		VIII	Clinton	10		November 15, 2004	Complete	
VIII		Market	8	December 1, 2004		Complete		
VIII		Washington	10	December 15, 2004		Complete		
VIII		Memorial	7	December 31, 2004		Complete		
						225		
Subtotal				450				
C	IX	TMC	TEXAS MEDICAL CENTER (TMC)	90	October 31, 2004	Complete		
			COH - Optimized Timing					
Subtotal				90				
D	X	Uptown	UPTOWN	35	October 31, 2004	Complete		
			Uptown Management					
Subtotal				35				
Grand Total				1540				