

Appendix 9c-J

Calculations of Options Suggested During the Public Comment Process

Local Options Submitted During the Comment Period

The following is a list of suggested local options that were submitted to the commission during the public comment period for this SIP. To date, the commission has quantified several of the items on this list, and has included that quantification in Tables 32 and 33 in the SIP. The commission will use these suggested local options as the start of ongoing discussions for the appropriate final control strategy for the HGA area, and will continue to work with the local area to develop this strategy. The suggestions are listed along with the commentor.

City of Houston, Mayor's Office:

- ◆ Large stationary sources that have been permitted by the commission should install pollution control equipment to reduce their NOx levels by at least another 65%.
- ◆ Additionally, grandfathered facilities should install the same type of pollution control equipment to reduce their NOx levels that permitted facilities will be installing.
- ◆ The commission should place a priority on reducing benzene and other toxic compounds as part of the VOC reduction plan.
- ◆ Support for the Regional Strategy to reduce NOx emissions from stationary sources in the surrounding counties. However, these reductions should not be a substitute for emissions reductions within the HGA region.
- ◆ The existing I/M program should be extended to all of the counties included in the HGA nonattainment area (all 8 counties).
- ◆ The I/M program should be strengthened to include a NOx screening component.
- ◆ The I/M program should also be expanded to include all vehicles fueled by diesel because of the relatively high levels of NOx emissions from such vehicles.
- ◆ The second phase of RFG should be developed and marketed on an accelerated basis. This gasoline should be designed so that fine particle emissions are minimized.
- ◆ This cleaner burning gasoline should be implemented in the surrounding counties.
- ◆ The National Low Emissions Vehicle Program should be implemented as quickly as possible.
- ◆ A cleaner burning diesel fuel that reduces NOx emissions as well as fine particle precursors should be mandated.
- ◆ The TNRCC should develop and implement the regulations that are needed to significantly reduce NOx from off-road mobile sources.
- ◆ A "hot"spot" strategy should be developed for the SIP.

Harris County Judge Robert Eckels:

- ◆ region-wide emission testing
- ◆ expanded use of reformulated gasoline
- ◆ early availability of national low emitting vehicles
- ◆ more efficient regional transportation systems including mass transit options
- ◆ smart transportation systems such as TranStar

Texas Auto Dealers Association:

- ◆ Stage I Vapor Recovery in the outlying counties
- ◆ Stage II vapor recovery in the outlying counties
- ◆ VOC RACT in the outlying counties

HGAC Staff:

- ◆ Include TCMs that have been submitted as part of their June 10, 1996 transmittal letter only if EPA agrees to use the categories and magnitudes approach rather than the project-by-project approach to future TCM commitments.

Environmental Defense Fund:

- ◆ Expanded I/M programs
- ◆ Accelerated Vehicle Retirement
- ◆ Market-based transportation policies including "congestion pricing"
- ◆ Alternative Fuels

American Lung Association:

- ◆ More stringent, centralized tailpipe testing of vehicles
- ◆ Pollution Prevention and Source Reduction Plans

Sierra Club:

- ◆ Make early VOC reductions to offset possible NOx disbenefit
- ◆ Target toxic VOCs with reactivity for early control

- ◆ Improved RFG and reformulated diesel fuel for the entire state or region (including non-road mobile source benefits)
- ◆ Enforce an end to grandfathered status with major reductions to BACT/BART levels at least for the Houston/Galveston area and wider area of influence.
- ◆ Innovative Initiatives

Galveston/Houston Association for Smog Prevention:

- ◆ The organization made several comments which are similar to those already listed in this document, or are discussed in the analysis of testimony.

Individual:

- ◆ Required installation of continuous on-line analyzers to measure VOCs in cooling tower water resulting from heat exchanger leaks.

Several Individuals:

- ◆ Make the grandfathered sources come into the state permitting program as soon as possible and quantify the reductions available from their doing so.
- ◆ Stringent enforcement of smoking vehicle laws
- ◆ More stringent I/M.

Additional Local Options Calculated

Measure	VOC Reductions (tpd)	NOx Reductions (tpd)
I/M--Expanded to 8-County	8.61	1.94
I/M--More Stringent--ASM	44.03	54.92
California LEV	6.27	15.88
TCM's, Scrappage, Clean Fuel Fleet, etc.	<2.00	Not able to be quantified in time for adoption
TOTAL	60.91	72.74

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

March 19, 1998

Mr. Dewayne Huckabay, Chairman
Regional Air Quality Planning Committee
Houston-Galveston Area Council
P.O. Box 22777
Houston, TX 77227-2777

Dear Mr. Huckabay:

Dewayne

Thank you for your letter of February 5, 1998, requesting that the Texas Natural Resource Conservation Commission (commission) assist the Houston-Galveston Area Council (H-GAC) in determining the emission reductions of potential local option control measures. The commission looks forward to your input regarding the local options portion of the proposed Houston/Galveston Area (H/GA) Attainment Demonstration.

The commission provided the requested information through a series of faxes and information packets sent over the last month. The first fax, regarding inspection and maintenance (I/M) program expansion to the eight-county H/GA, was sent on February 13, 1998. The second fax, regarding additional I/M research, was sent on March 12, 1998, and the third fax, regarding federal control measure programs, was sent on March 13, 1998. I am also enclosing some additional information I received in the past few days which compares a couple of different I/M scenarios. These documents are included as enclosures to this letter. A copy of the 1995 Control Measure Catalog was provided to H-GAC staff early in February. Additionally, information from the most recent South Coast Air Quality Management District State Implementation Plan (SIP) dealing with on-road and non-road mobile source control strategies was sent to H-GAC staff on March 5, 1998. We trust that this information has proved useful to you as you consider comments on the H/GA Attainment Demonstration.

We believe that the April 1998 SIP submittal is an important first step in starting the real work of crafting the H/GA Attainment Demonstration. The next two years offers us a unique opportunity to work together to develop a strategy to improve the air quality in the H/GA, to use public input to write effective, sensible rules, and to explore the potential benefits of a program like Houston

Mr. Dewayne Huckabay, Chairman

Page 2

March 19, 1998

Air Excellence in Leadership to address problems like the interactions between pollutants and cost/benefit issues. We look forward to working with you to ensure continued improvement in Houston's air quality. Please contact me if you have any questions or would like to discuss any element of the H/GA's air quality.

Sincerely,

A handwritten signature in cursive script, appearing to read "H. Williams, Jr.", written in dark ink.

Herbert W. Williams, Jr., Director
Air Policy and Regulations Division

HW/EH/cv

Enclosures

Potential Air Quality Benefits of Expanding the Texas Motorist Choice Program in the Houston, Texas Ozone Nonattainment Region

Sam Wells
Area and Mobile Source Assessment Section
February 10, 1997 DRAFT

Methodology

The purpose was to model the effect of implementing the Texas Motorist Choice (TMC) program in counties surrounding Harris County, Texas. Vehicle miles of travel (VMT), 24-hour speeds, and VMT mixes were from the latest conformity "build" scenario for the year 2007. The VMT is slightly low because HOV, intrazonals, non-recurring congestion were not included in this analysis. MOBILE5b was used, out of a concern that MOBILE5a does not reflect Phase II reformulated gasoline credits. Also, the analysis did not include the +60,000 vehicles which are outside Harris County but are currently in the TMC program. The spreadsheet file <HOUVMT.WB2> contains the computations.

Findings

Findings are expressed in terms of tons (American) per ozone-season day (TPOD).

Table 1. Findings

County	VOC Reductions, TPOD	NO _x Reductions, TPOD
Harris	21.268	4.725
Brazoria	1.379	0.287
Fort Bend	2.070	0.449
Waller	0.474	0.128
Montgomery	2.022	0.461
Liberty	0.681	0.153
Chambers	0.705	0.203
Galveston	1.278	0.255
total	29.877	6.661

I/M Team Responses to HGAC Letter of 2/5/98

Vehicle emissions inspection and maintenance program variations:

- **Motorist's Choice in Perimeter Counties**

Included with this package are estimates of emissions reductions that could be obtained by expanding the Texas Motorist's Choice (TMC) program to the 100 and 200 kilometer zones. We believe it important to note however, that the TNRCC may not have the authority to require any county in these zones -- other than Harris County -- to participate fully in the TMC program. The Health and Safety Code (Sec. 382.0372) limits the applicability of the I/M program to only four counties -- Harris, Dallas, Tarrant, and El Paso. A county may participate voluntarily if the county government and the largest city in that county request, by resolution, an air quality plan containing the TMC program.

- **"High Enhanced" I/M in Nonattainment Areas in 2002**

The TNRCC has not modeled NO_x emissions reductions available from a high enhanced I/M program in 2002. There are however, *preliminary* estimates available for emissions reductions achieved by an annual, decentralized ASM program in the Houston-Galveston area. An ASM program would achieve approximately 42.71 tons per day of NO_x reductions in the year 2007 in Harris County. The agency's Inspection/Maintenance team is available to provide assistance or input on various I/M programs.

- **More Stringent Cut Points**

At this time, the MOBILE Model accepts only one set of cut points for two-speed idle emissions tests (HC -- 220ppm, CO -- 1.2%, NO_x -- 999ppm). The EPA has not developed emissions reduction credits for other cut point combinations that might be used with a two-speed idle test. With advanced testing technologies such as ASM, we would have the capability to model multiple cut point combinations.

- **Remote Sensing**

Based on the present position of the remote sensing industry in the U.S., it is unlikely that Texas could institute a remote sensing program in the near future which could obtain emissions credits for the identification and repair of high-emitting vehicles. Remote Sensing Technologies, Inc. (RSTi) is currently the only company that has the demonstrated capability of providing a full package of remote sensing services. However, RSTi declined to submit an offer in response to a recent request-for-offers issued by the Texas Department of Public Safety (DPS). RSTi indicated that it's new corporate direction for remote sensing will be exclusively for the provision of "clean screening" services which could actually result in the loss of some emissions credits because a number of vehicles are exempted from periodic emissions testing requirements. RSTi stated that it is no longer willing to provide remote sensing services for the identification of high-emitting

vehicles. According to EPA, additional emission reduction credits would be available through use of a remote sensing system to identify and repair high-emitting vehicles.

As previously proposed for the Houston area, the primary purpose of the Texas remote sensing program was to identify high-emitting vehicles commuting into Harris county in lieu of requiring annual emissions tests for all vehicles in one or more of the counties surrounding Harris. Remote sensing was designed primarily to fill a population shortfall and not simply to obtain additional emission credits. The actual emission credits associated with this plan are relatively small because the 83,652 additional persons that need to be covered by emissions testing only results in an additional 5,000 "dirty" vehicles which need to be identified and repaired. The additional emission credits to be gained would also be minimal if it was decided to conduct remote sensing just for those vehicles in Harris County which are already subject to annual testing. Because the Harris County I/M Program operates at an effectiveness level similar to test-only networks and with a high compliance rate, there is little opportunity for additional emissions reductions to be created by remote sensing. Potential credits to be achieved from remote sensing would be higher if testing were conducted biennially or if the modeled effectiveness and compliance rates were lower.

- **On-Board Diagnostics**

In August 1996, the EPA published the current I/M OBD final rule, which requires states to implement OBD checks as part of their basic and enhanced I/M programs. The rule states that until January 1, 2000, OBD checks, exhaust tests, and evaporative system tests, where applicable, are required on each covered vehicle of model year 1996 and newer. During this period, vehicles which fail the OBD check would not automatically fail the I/M test. Only after January 1, 2000, would failure of the OBD test require mandatory repair and retest. The two-year period from when OBD checks were to be started, until they could generate enough I/M failures, was to be the period during which the EPA would evaluate the relative effectiveness of OBD.

The EPA was concerned that requiring states to perform OBD checks in tandem with regular tailpipe and evaporative emission testing may not generate enough additional emissions reductions to justify the added cost in time and equipment. The EPA felt that there is virtually no assurance that dual testing will generate either emissions reductions over and above what would be generated with tailpipe and evaporative testing alone or provide useful data that can be used to evaluate the efficacy of OBD testing in an I/M setting.

For the reasons stated above, on December 22, 1997, EPA proposed an amendment to the rule to delay the deadline by which OBD checks must be implemented in Ozone Transport Region (OTR) low-enhanced areas and in all other areas (basic and enhanced) until January 1, 2001. This amounts to a three-year delay for all other than OTR low-enhanced areas. This time delay will give the EPA the opportunity to gather and evaluate sufficient data to support informed decisions on whether to discontinue the tailpipe test and replace it with OBD testing and to establish credits for the OBD test. However, the state is still required by statute to amend its SIP by August 6, 1998 to include a plan for incorporating OBD checks into the I/M program by the

2001 deadline. The EPA rule delaying the deadline is expected to be adopted prior to adoption of this proposed committal SIP revision. After future EPA rule making and guidance, the TNRCC will be able to estimate emissions reduction created by OBD and can then adopt a revised SIP and rules to implement the OBD component of the I/M program.

- **Diesel Testing**

The potential emission reductions to be obtained from testing light-duty diesels within the current I/M program are minuscule simply because diesel-powered vehicles represent a tiny fraction of the overall light duty vehicle fleet. Based on July, 1997 data, only 4,902 (or 0.3%) of the 1,593,338 light-duty vehicles registered in Harris County are diesel-powered. Based on the same data source, only 9,665 (1.6%) of the 586,032 light-duty trucks registered in Harris County are diesel-powered. In addition, EPA's MOBILE Model cannot estimate emission reductions from light-duty diesels achieved through an I/M Program.

Unfortunately, when trying to control emissions from in-use diesel vehicles, an inherent tradeoff exists between NO_x and HC/particulate emissions. The conventional "short test" for measurement of diesel emissions has been achieved with an opacity check which determines the "darkness" of the particulate matter (PM) in the exhaust. The same repair of a diesel "smoker" which reduces HC and PM emissions also results in higher NO_x. Compared to a gasoline-powered engine, a diesel engine, by design, produces more NO_x because it operates at a much higher pressure and temperature. As the valves, gaskets, piston rings, etc. of a diesel engine wear over time, the amount of NO_x produced tends to decrease because the temperature and pressure of the combustion chamber decrease. The tradeoff to decreased NO_x from a worn and inefficient diesel engine is increased HC and particulate emissions due to the unburned fuel from incomplete combustion.

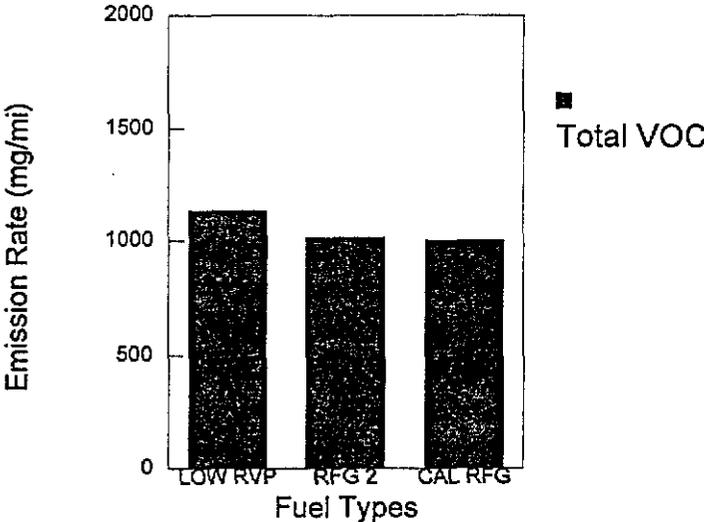
Due to these tradeoffs and the low number of diesel vehicles on the road, there is little to be gained from conducting I/M tests on in-use diesel vehicles. Instead, EPA has been working with diesel engine manufacturers to reduce HC, PM, and NO_x levels at the design and manufacture stage for both on-road and off-road diesel engines. The stated goal is to reduce diesel emissions by in 2004 by 50% from their 1998 levels. After 2004, the option of including diesels within the Texas I/M Program can then be reevaluated.

Sensitivity Analysis for the Different Fuel formulation.

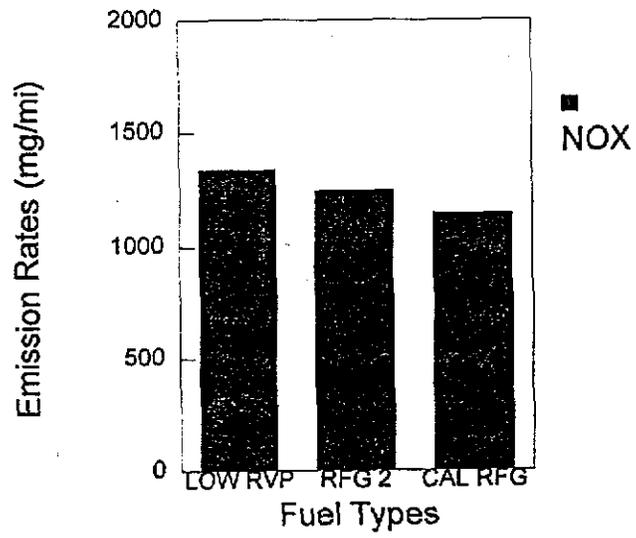
EPA's complex model was used to calculate the emission rates to the four different fuel types: Baseline fuel, Low RVP, RFG phase 2 and Cal RFG. Each fuel property was recorded in the input column of the complex model to generate an output in mg/mi as shown in table 1 and the graphs below.

Given the limitation on complex model in calculating emissions for SIP reporting, the complex model is used simply as a tool to calculate the percentage difference between the fuel types. This analysis thus, calculates the emission rates for each fuel type and the percent differences were computed between the RFG phase 2 and each of the other fuel types. (see table 1a)

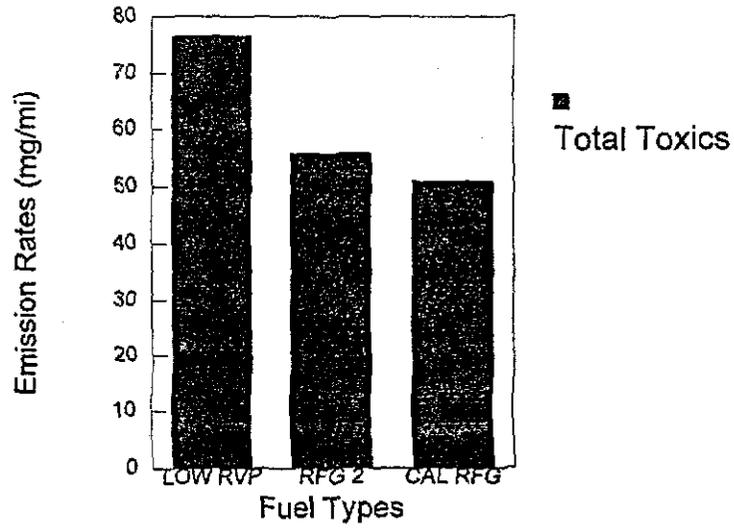
Comparison of lowRVP, RFG 2 & Cal RFG



Comparison of LowRVP, RFG 2& Cal RFG



Comparison of LowRVP, RFG 2 & Cal RFG



H-GAC Questions

California LEV

- California LEV would require a statewide commitment. At this time, NLEV is the best and earliest solution Texas can see for improving vehicle technology.

Tier II

- The Tier II program is under study now by the EPA. TNRCC will be voting soon on the Tier II resolution STAPPA/ALAPCO is developing encouraging EPA to move forward with the Tier II standards. TNRCC has already voted in support of lower sulfur resolutions through the STAPPA/ALAPCO resolution on sulfur (October 1997).

NLEV

- TNRCC is fully supportive of the NLEV program and will take full credit for the program as it is implemented in Texas.

Accelerating implementation of various federal and state controls to start in 1999.

- Most of these programs are the result of extensive government/industry regulatory negotiation. The programs that have not been completed, TNRCC will, where appropriate, ask that these be implemented as early as possible. The programs that are now finalized and set to start in years beyond 1999, TNRCC does not feel can be implemented much earlier due to technical reasons. Industry will need the time to develop advanced emission control equipment and prepare this equipment for mass production.

Comparison between California Clean Diesel and Federal Low Sulfur Diesel

Fuel Property Differences	Federal Low Sulfur Diesel	California Clean Diesel
¹ Sulfur, ppm	500	500
² Aromatics, maximum v. %	35	10 ³
⁴ Cetane number, minimum	40	48
Fuel Use	Federal Low Sulfur Diesel	California Clean Diesel
On-Road	Yes	Yes
Off-Road	No	Yes ⁵
⁶Emission Reductions (tons/day)	⁷Federal Low Sulfur Diesel	California Clean Diesel
Sulfur Dioxide (SO ₂)	60	80
Particulate Matter (PM), sulfur content	4	5
Nitrogen Oxides (NO _x)	0	70
Particulate Matter (PM), aromatics content	0	15
Costs	Federal Low Sulfur Diesel	California Clean Diesel
⁸ Average Retail Prices (01/05/98), per gallon	\$1.12	\$1.31

Also, H-GAC may want to review NESCAUM's report on "Heavy-Duty Engine Emissions in the Northeast", published May 1997.

¹Prior to 1993, sulfur was limited to 2500 ppm (0.25 % by weight).

²Lower levels of aromatics (e.g. benzene) reduce emissions of particulate matter, NO_x, and toxic air emissions.

³Refiners are allowed to exceed the 10 % cap, up to the federal limit, if the fuel formulation is shown to have equivalent emission characteristics.

⁴The Cetane number is a measure of how fast the fuel will ignite or burn in a compression ignition engine (e.g. diesel).

⁵Except Marine and Rail.

⁶Source: California Air Resources Board.

⁷Federal program is for on-road use only, California requires clean diesel for on-road and off-road use.

⁸Source: U.S. DOE, Energy Information Administration, On-Highway Diesel Price Survey, 01/05/1998.

Technical Note

Comparison of I/M Test Types and Expanded Geographic Coverage in the Houston-Galveston-Brazoria Nonattainment Area

Sam Wells

Area and Mobile Source Assessment Section

Introduction

The Air Policy and Regulations Development Division asked our section to estimate air quality benefits of enhancing the existing Texas Motorist Choice (TMC) program. The first option was to model a geographic expansion of the TMC program from Harris County to the nonattainment area boundaries. The second was to examine acceleration simulation mode (ASM) types of inspection/maintenance tests, as compared to the existing 2-speeded loaded mode test.

Methodology

Summarized data from the 2007 Conformity Determination was used as inputs for speeds and vehicle miles of travel (VMT). The speeds are 24-hour weighted composites. The VMT's were summed to 24-hour totals from four time periods. MOBILE5b was used to estimate base emission and alternative TMC scenarios, using standard State Implementation Plan inputs. Expansion counties were assumed to start the TMC program in the year 2000. Phase II ASM cutpoints (equivalent to IM240 cutpoints of 0.8/15/2.0) were assumed to be in place by the evaluation year, 2007.

Findings

Tables 1 and 2 present total volatile organic compounds (VOC) and oxides of nitrogen (NO_x) as potential reductions. The "8-County" column includes reductions counted in Harris County. *These findings should be used for the general planning purposes, since the method used by the Houston-Galveston Area Council would use a more refined, link-based analysis.*

Table 1. Potential VOC Credits (tons per day)

I/M Type	Harris County	8-County
2-Speed Loaded	22.00	30.92
ASM Annual	33.64	47.24
ASM Biennial	31.36	44.03

Table 2. Potential NO_x Credits (tons per day)

I/M Type	Harris County	8-County
2-Speed Loaded	4.80	6.54
ASM Annual	42.71	57.56
ASM Biennial	39.41	54.92



Houston-Galveston Area Council

PO Box 22777 • 3585 Timmons • Houston, Texas 77227 2777 • 713-627-3200

June 10, 1996

Mr. Jim Thomas
Director, Air Quality Planning Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, TX 78711-3081

Dear Mr. Thomas:

The Houston-Galveston Area Council is pleased to transmit revised 1996 and 1999 transportation emission estimates in support of the State Implementation Plan revisions (Super SIP) TNRCC is currently completing. Accompanying the revised emissions estimates are revised commitments for Transportation Control Measures (TCMs) to be included in the Super SIP. As required by the TCM rule, these commitments are in the form of categories of TCMs with magnitudes and one aggregate volatile organic compound emission reduction target for each milestone year.

TCM emission benefits were recalculated as part of the Super SIP effort because changes to the Vehicle Inspection and Maintenance Program changed the emission factors applied to the vehicle miles of travel reduced, speed changes or delay reductions expected to result from implementation of the various TCMs. Some magnitudes of TCM categories have been changed to reflect updated information regarding the projects monitored by H-GAC as part of the TCM commitments. Changes since the original commitments were made to some emission reduction methodologies have also been considered in the revisions. Revised commitments are detailed in Attachment A and amount to no less than 724 pounds per day of volatile organic compound (VOC) reduced by 1996, 990 pounds per day of VOC reduced by 1999, and 562 pounds per day of VOC reduced by 2007. A table of projects to be monitored follows Attachment A.

In response to a new requirement from the U.S. Environmental Protection Agency (EPA) to list with further detail commitments in the Miscellaneous category in consultation with the implementing agencies, H-GAC is removing the category. We believe that EPA's new requirement violates the agreement to SIP commitments of categories and magnitudes. The intent of the agreement was to avoid singling out any single project for commitment or potential sanctions for failure to meet the commitment. Disaggregating the Miscellaneous category would isolate individual projects. Given the local implementing agencies' discomfort with isolating projects, we can no longer commit to the projects in the Miscellaneous category.



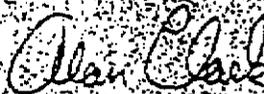
Mr. Jim Thomas

June 10, 1995

Page 2

If you need additional information, please do not hesitate to contact me or Ms. Jacquie Lentz (713) 627-3200.

Sincerely,



Alan Clark
MPO Director

Jacquie Lentz, H-GAC

Hans C. Olavson, TxDOT

John Sedlak, METRO

Jimmie Schindewolf, Transportation Policy Council Chairman

Dewayne Huckabay, Regional Air Quality Planning Committee Chairman

Enclosures

ATTACHMENT A

HOUSTON-GALVESTON-BRAZORIA SEVERE OZONE NONATTAINMENT AREA
1996 TRANSPORTATION CONTROL MEASURE COMMITMENT

MILESTONE YEAR 1996

Arterial Traffic Management System	41.0 Miles	57.58	Pounds per day
Computer Transportation Management System	22.2 Miles	139.02	Pounds per day
High Occupant Vehicles Lane	14.7 Miles	468.26	Pounds per day
Park and Ride Lot	3,745 Spaces	57.46	Pounds per day
Signalization	2.9 Miles	2.14	Pounds per day

MILESTONE YEAR 1999

Accident Investigation Site	3.2 Miles	50.94	Pounds per day
Arterial Traffic Management System	65.8 Miles	91.38	Pounds per day
Bicycle Facility	262.3 Miles	198.95	Pounds per day
Computer Transportation Management System	70.3 Miles	320.11	Pounds per day
High Occupant Vehicles Lane	3.5 Miles	69.48	Pounds per day
Park and Ride Lot	1,643 Spaces	91.49	Pounds per day
Signalization	49.3 Miles	23.05	Pounds per day
VanPool	225 Vans	145.10	Pounds per day

MILESTONE YEAR 2007

Accident Investigation Site	30.0 Miles	221.59	Pounds per day
Arterial Traffic Management System	1.5 Miles	1.71	Pounds per day
Computer Transportation Management System	59.5 Miles	339.33	Pounds per day

*Have I/M
Programs*

*Do not have
I/M Programs*

4/3/98

VEHICLE SCRAPPAGE BENEFITS

	DALLAS/TARRANT			COLLIN/DENTON		
	LDGV	LDGT1	LDGT2	LDGV	LDGT1	LDGT2
VEHICLES	41138	26307	1371	7847	4481	270
ANN MILES	4064	3738	6551	4064	3738	6551
ANN VMT	167,164,832	98,335,586	8,981,421	31,680,208	16,749,978	1,768,770
DAILY VMT	557,283	327,785	29,938	108,301	55,833	5,898
VOC BENEFIT (G/M)	4,582	4,816	7,182	4,828	5,224	9,055
NOx BENEFIT (G/M)	2,185	1,739	3,204	2,24	1,902	4,5
DAILY VOC BENEFIT (LBS)	5,637	3,477	474	1,131	642	112
DAILY NOx BENEFIT (LBS)	2,692	1,258	211	524	234	58
TTL DAILY VOC (LBS)	9,587			1,891		
TTL DAILY NOx (LBS)	4,149			817		

	HARRIS			OTHER HOUSTON AREA		
	LDGV	LDGT1	LDGT2	LDGV	LDGT1	LDGT2
VEHICLES	27176	12713	676	10278	6060	374
ANN MILES	4064	3738	6551	4064	3738	6551
ANN VMT	110,443,264	47,521,194	4,428,476	41,769,792	22,652,280	2,450,074
DAILY VMT	368,144	158,404	14,762	139,233	75,608	8,167
VOC BENEFIT (G/M)	4,105	4,262	6,08	4,829	5,224	9,055
NOx BENEFIT (G/M)	2,442	1,884	3,474	2,24	1,902	4,5
DAILY VOC BENEFIT (LBS)	3,329	1,487	138	1,431	889	163
DAILY NOx BENEFIT (LBS)	1,980	650	113	687	318	81
TTL DAILY VOC (LBS)	5,013			2,613		
TTL DAILY NOx (LBS)	2,744			1,084		

	EL PASO		
	LDGV	LDGT1	LDGT2
VEHICLES	11006	6583	411
ANN MILES	4064	3738	6551
ANN VMT	44,728,384	24,532,494	2,892,481
DAILY VMT	149,095	81,775	8,975
VOC BENEFIT (G/M)	4,081	4,227	5,689
NOx BENEFIT (G/M)	2,388	1,935	3,588
DAILY VOC BENEFIT (LBS)	1,340	761	112
DAILY NOx BENEFIT (LBS)	788	349	71
TTL DAILY VOC (LBS)	2,214		
TTL DAILY NOx (LBS)	1,207		

Accelerated Vehicle Retirement (Scrappage) in Texas Projected Emission Reductions

I. Emission figures are based on the following assumptions:

- Model Year vehicles 1974 or older
- LDGV, LDGT1 and LDGT2
- Included as SIP inputs into MOBILE 5a, are average summer temperature (ranging from mid to high 80s depending on area) and annual Vehicle Miles Travelled (VMT)

Default VMT Values by Non-Attainment Area

ANNUAL AVERAGE VEHICLE MILES TRAVELLED PER CAR			
	Dallas/Tarrant	Harris	El Paso
LDGV	4,064	4,064	4,064
LDGT1	3,738	3,738	3,738
LDGT2	6,551	6,551	6,551

- 1974 and older vehicles are too old to be included in the I/M Program in Texas
- EPA default value of 300 driving days/year
- 300 driving days/year (work days plus some weekend driving)
- MOBILE 5a Model Accumulation Rates + 300 (driving days/year)
- EPA default value of 300,278 annual VMT/year for 1974 or older LDGV, LDGT1 and LDGT2
- The January 1998 total for model year 1974 and older vehicles (LDGV, LDGT1, and LDGT2) in Texas non-attainment counties is 156,671

II. Value of a Scrappage Program

VOC Benefit

% Vehicles Replaced (1974 and older)	Dallas/Fort Worth	Houston	El Paso
100%	0.14 lbs/day	0.13 lbs/day	0.12 lbs/day
100%	42 lbs/year	39 lbs/year	36 lbs/year

- Average pre-1974 vehicle in a Texas non-attainment area emits 0.134 lbs VOC/day/vehicle
- Average pre-1974 vehicle in a Texas non-attainment area emits - 40 lbs. VOC/year/vehicle
- To generate an emission reduction of 1.0 ton VOC/year, 7,500 vehicles

III. Comparison with South Coast Air Quality Management District (SCAQMD) Scrappage Program in California

- To meet same results as the SCAQMD Scrappage Program, 6,500 pre-1981 vehicles/year, and achieve 0.43 tons VOC/day in emissions reductions

Note:

These conservative emission reduction figures are conservative estimates, and would increase if tested high polluters were targeted.