REVISIONS TO THE STATE IMPLEMENTATION PLAN (SIP) FOR THE SUBSTITUTION OF THE FEDERAL CLEAN FUEL FLEET PROGRAM

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A. INTRODUCTION

Requirements for State Implementation Plans (SIP) specified in 40 Code of Federal Regulations (CFR) Part 51.12 provide that "...in any region where existing (measured or estimated) ambient levels of pollutant exceed the levels specified by an applicable national standard," the plan shall set forth a control strategy which shall provide for the degree of emission reduction necessary for attainment and maintenance of such national standard. Ambient levels of sulfur dioxide and oxides of nitrogen (NO_x), as measured from 1975 through 1977, did not exceed the national standards set for these pollutants anywhere in Texas. Therefore, no control strategies for these pollutants were included in revisions to the Texas SIP submitted on April 13, 1979. Control strategies were submitted and approved for inclusion in the SIP for areas in which measured concentrations of ozone, total suspended particulate (TSP), or carbon monoxide (CO) exceeded a National Ambient Air Quality Standard (NAAQS) during the period from 1975 to 1977. On October 5, 1978, the Administrator of the U.S. Environmental Protection Agency (EPA) promulgated a lead ambient air quality standard. The Federal Clean Air Act (FCAA) Amendments of 1977 required that each state submit an implementation plan for the control of any new criteria pollutant. A SIP revision for lead was submitted in March of 1981.

The control strategies submitted in 1979 provided by December 31, 1982 the amount of emission reductions required by EPA policy to demonstrate attainment of the primary NAAQS, except for ozone in the Harris County nonattainment area. For that area, an extension to December 31, 1987 was requested, as provided for in the FCAA Amendments of 1977.

Supplemental material, including emission inventories for volatile organic compounds (VOC) and TSP submitted with the 1979 SIP revisions, is included in Appendices H and O of the 1979 SIP submittal.

Proposals to revise the Texas SIP to comply with the requirements of the FCAA Amendments of 1977 were submitted to EPA on April 13, November 2, and November 21, 1979. On December 18, 1979 (44 FR 75830-74832), EPA approved the proposed revision to the Texas SIP relating to vehicle inspection and maintenance and extended the deadline for attainment of the NAAQS for ozone in Harris County until December 31, 1987. (See Appendix Q of the 1979 SIP submittal for the full text of the extension request and the approval notice.) On March 25, 1980 (45 FR 19231-19245), EPA approved and incorporated into the Texas SIP many of the remaining provisions included in the proposals submitted by the state in April and November 1979. The March 25, 1980 Federal Register notice also included conditional approval of a number of the proposed SIP revisions submitted by the state.

Additional proposed SIP revisions were submitted to EPA by the state on July 25, 1980 and July 20, 1981 to comply with the requirements of the March 25, 1980 conditional approvals. By May 31, 1982, all of the proposed revisions to the Texas SIP submitted to EPA in April and November 1979, July 1980, and July 1981, with the exception of provisions relating to the definition of major modification used in new source review (NSR) and certain portions of the control strategy for TSP in Harris County, had been fully approved or addressed in a Federal Register notice proposing final approval. The NSR provisions were approved on August 13, 1984.

The FCAA Amendments of 1977 required SIPs to be revised by December 31, 1982 to provide additional emission reductions for those areas for which EPA approved extensions of the deadline for attainment of the NAAQS for ozone or CO. Paragraph B.5. of this section of the SIP contains the

revision to the Texas SIP submitted to comply with the FCAA Amendments of 1977 and EPA rules for 1982 SIP revisions. Supplementary emissions inventory data and supporting documentation for the revision are included in Appendices Q through Z of the 1982 SIP submittal.

The only area in Texas receiving an extension of the attainment deadline to December 31, 1987 was Harris County for ozone. Proposals to revise the Texas SIP for Harris County were submitted to EPA on December 9, 1982. On February 3, 1983, EPA proposed to approve all portions of the plan except for the Vehicle Parameter Inspection/Maintenance (I/M) Program. On April 30, 1983, the EPA Administrator proposed sanctions for failure to submit or implement an approvable I/M program in Harris County. Senate Bill 1205 was passed on May 25, 1983 by the Texas Legislature to provide the Texas Department of Public Safety (DPS) with the authority to implement enhanced vehicle inspection requirements and enforcement procedures. On August 3, 1984, EPA proposed approval of the Texas SIP pending receipt of revisions incorporating these enhanced inspection procedures and measures ensuring enforceability of the program. These additional proposed SIP revisions were adopted by the state on November 9, 1984. Final approval by EPA was published on June 26, 1985.

Although the control strategies approved by EPA in the 1979 SIP revisions were implemented in accordance with the provisions of the plan, several areas in Texas did not attain the primary NAAQS by December 31, 1982. On February 23, 1983, EPA published a Federal Register notice identifying those areas and expressing the intent to impose economic and growth sanctions provided in the FCAA. However, EPA reversed that policy in the November 2, 1983 Federal Register, deciding instead to call for supplemental SIP revisions to include sufficient additional control requirements to demonstrate attainment by December 31, 1987.

On February 24, 1984, the EPA Region 6 Administrator notified the Governor of Texas that such supplemental SIP revisions would be required within one year for ozone in Dallas, Tarrant, and El Paso Counties and CO in El Paso County. The Texas Air Control Board (TACB) requested a six-month extension of the deadline (to August 31, 1985) on October 19, 1984. EPA approved this request on November 16, 1984.

Proposals to revise the Texas SIP for Dallas, Tarrant, and El Paso Counties were submitted to EPA on September 30, 1985. However, the revisions for Dallas and Tarrant Counties did not provide sufficient reductions to demonstrate attainment of the ozone standard and on July 14, 1987, EPA published intent to invoke sanctions. Public officials in the two counties expressed a strong desire to provide additional control measures sufficient to satisfy requirements for an attainment demonstration.

A program of supplemental controls was taken to public hearings in late October 1987. As a result of testimony received at the hearings, a number of the controls were modified and several were deleted, but sufficient reductions were retained to demonstrate attainment by December 31, 1991. These controls were adopted by the TACB on December 18, 1987 and were submitted to EPA as proposed revisions to the SIP. Supplemental data and supporting documentation are included in Appendices AA through AO of the 1987 SIP submittal.

The FCAA Amendments of 1990 authorized EPA to designate areas failing to meet the NAAQS for ozone as nonattainment and to classify them according to severity. The four areas in Texas and their respective classifications include: Houston/Galveston (severe), Beaumont/Port Arthur (serious), El Paso (serious), and Dallas/Fort Worth (moderate).

The FCAA Amendments required a SIP revision to be submitted for all ozone nonattainment areas classified as moderate and above by November 15, 1993 which described in part how an area intends to decrease VOC emissions by 15%, net of growth, by November 15, 1996. The amendments also required all nonattainment areas classified as serious and above to submit a revision to the SIP by November 15, 1994 which described how each area would achieve further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years and which includes a demonstration of attainment based on modeling results using the Urban Airshed Model (UAM). In addition to the 15% reduction, states were also required to prepare contingency rules that will result in an additional 3.0% reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x. Underlying this substitution provision is the recognition that NO_x controls may effectively reduce ozone in many areas and that the design of strategies is more efficient when the characteristic properties responsible for ozone formation and control are evaluated for each area. The primary condition to use NO_x controls as contingency measures is a demonstration through UAM modeling that these controls will be beneficial toward the reduction of ozone. These VOC and/or NO_x contingency measures would be implemented immediately should any area fall short of the 15% goal.

Texas submitted rules to meet the Rate-of-Progress (ROP) reduction in two phases. Phase I consisted of a core set of rules comprising a significant portion of the required reductions. This phase was submitted by the original deadline of November 15, 1993. Phase II consisted of any remaining percentage toward the 15% net of growth reductions, as well as additional contingency measures to obtain an additional 3.0% of reductions. Phase II was submitted by May 15, 1994. The complete list of contingency measures was submitted by November 15, 1994. The appropriate compliance date was to be incorporated into each control measure to ensure that the required reductions will be achieved by the November 15, 1996 deadline. A commitment listing the potential rules from which the additional

percentages and contingency measures were selected was submitted in conjunction with the Phase I SIP on November 15, 1993. That list of Phase II rules was intended to rank options available to the state and to identify potential rules available to meet 100% of the targeted reductions and contingencies. Only those portions of the Phase II rules needed to provide reasonable assurance of achieving the targeted reduction requirements were adopted by the commission.

The Dallas/Fort Worth (DFW) and El Paso (ELP) areas achieved sufficient reductions with the 15% ROP SIP to demonstrate attainment by 1996. Attainment Demonstration SIP Revisions for these two areas were submitted on September 14, 1994.

The FCAA Amendments of 1990 classified the Beaumont/Port Arthur (BPA) area as a serious nonattainment area. The BPA nonattainment area includes Hardin, Jefferson, and Orange Counties. The BPA nonattainment area has an ozone design value of 0.16 ppm, which places the area in the serious classification.

In December of 1990, then-Texas Governor William Clements requested that the BPA area be reclassified as a "Moderate" ozone nonattainment area in accordance with Section 181(a)(4) of the FCAA Amendments of 1990. That request was denied on February 13, 1991. A recent review of the original request and supporting documentation has revealed that this denial was made in error. As provided by Section 110(k)(6) of the Act, the Administrator of the EPA has the authority to reverse a decision regarding original designation if it is discovered that an error had been made.

Monitoring data from a privately-funded, special purpose monitoring network which was not included in the Aerometric Information Retrieval System database was improperly used to deny this request.

Furthermore, subsequent air quality trends demonstrate that BPA is more properly classified as a Moderate nonattainment area, and should attain the standard by the required date for Moderate areas of November 15, 1996. Therefore, Governor Bush sent a letter and technical support to EPA in July, 1995, requesting that the BPA area be reclassified to Moderate nonattainment status. BPA plans to demonstrate attainment one of the following ways:

♦ Monitored values showing attainment of the standard at state-operated monitors for the years 1994-1996, which is the timeline the FCAA Amendments of 1990 specifies for Moderate areas.

♦ UAM modeling showing attainment of the standard but for transport of ozone and/or precursors.

EPA Region VI verified the data submitted in support of this request, and concurred that it is valid. On June 3, 1996, the reclassification of the BPA area became effective. Because the area was classified as Serious, it was following the SIP submittal and permitting requirements of a Serious area, which included the requirements for a Post-96 SIP. With this consolidated SIP submittal, the commission has removed the BPA area from the Post-96 SIPs, which became applicable to HGA only.

The FCAA Amendments of 1990 require a Post-96 ROP SIP revision and accompanying rules to be submitted by November 15, 1994. According to the FCAA Amendments, this submittal had to contain an Attainment Demonstration based on UAM. Additionally, the revision had to demonstrate how the Houston/Galveston (HGA) nonattainment area intends to achieve a 3% per year reduction of VOC and/or NO_x until the year 2007, and additional reductions as needed to demonstrate modeled attainment. The plan was also required to carry an additional 3% of contingency measures to be implemented if the nonattainment area fails to meet a deadline. To use NO_x reductions for all or part of the Post-96

controls or the contingency measures required a demonstration using UAM showing that NO_x controls would be beneficial in reducing ozone.

On November 9, 1994, the state submitted a SIP revision designed to meet the 3% per year ROP requirements for the years 1997-1999. This Post-96 ROP SIP revision detailed how the BPA and HGA nonattainment areas intend to achieve these three years' reductions of VOC (or 9% net-of-growth). Most of this amount was achieved by quantifying additional reductions due to existing rules and reductions due to federally-mandated rules. Rules to achieve the further reductions needed to meet the ROP SIP goal were submitted to EPA on January 11, 1995. This submittal included modeling demonstrating progress toward attainment, using a 1999 future year emissions inventory.

On August 14, 1994, the state submitted preliminary UAM modeling results for the BPA and HGA nonattainment areas that showed the relationship between emission levels of VOC and NO_x, and ozone concentrations. This modeling was conducted with a 1999 future year emissions inventory. Based on the results of this preliminary modeling, which show a disbenefit to NO_x reductions, on April 12, 1995 the state received a temporary Section 182(f) exemption from all NO_x requirements including reasonably available control technology (RACT), I/M, NO_x New Source Review, and transportation conformity requirements. Permanent §182(f) exemptions from all NO_x requirements were granted for DFW and ELP, and temporary exemptions until December 31, 1996 for HGA and BPA. The commission has subsequently requested that EPA extend this date until December 31, 1997.

On March 2, 1995, Mary Nichols, EPA Assistant Administrator for Air and Radiation, issued a memo which gave states some flexibility to design a phased Attainment Demonstration. It provided for an initial phase which was intended to continue progress in reducing levels of VOC and/or NO_x while

giving states an opportunity to address scientific issues such as modeling and transport. The second phase was designed to draw upon the results of the scientific effort and design a plan to bring the area into attainment. To constitute Phase I under this approach, the EPA guidance required that states submit the following SIP elements by December 31, 1995:

♦ Control strategies to achieve reductions of ozone precursors in the amount of 3% per year from the 1990 baseline emissions inventory (EI) for the years 1997, 1998, and 1999.

♦ UAM modeling out through the year 1999, showing the effect of previously-adopted control strategies which were designed to achieve a 15% reduction in VOCs from 1990 through 1996.

♦ A demonstration that the state has met the VOC RACT requirements of the FCAA Amendments.

♦ A detailed schedule and plan for the "Phase II" portion of the attainment demonstration which will show how the nonattainment areas can attain the ozone standard by the required dates.

♦ An enforceable commitment to:

- ♦ Participate in a consultative process to address regional transport,
- ♦ Adopt additional control measures as necessary to attain the ozone NAAQS, meet ROP requirements, and eliminate significant contribution to nonattainment downwind, and
- ♦ Identify any reductions that are needed from upwind areas to meet the NAAQS.

Texas submitted the first two of these required sections in November 1994. The remaining three, a VOC RACT demonstration, the required commitments, and a Phase II plan and schedule, were submitted on January 10, 1996 to EPA.

ROP SIP modeling is being developed for the HGA nonattainment area in two phases using the UAM. The first phase of ROP modeling was the modeling submitted in January, 1995, as described above. The second phase of the ROP modeling is being conducted using data obtained primarily from the Coastal Oxidant Assessment for Southeast Texas (COAST) project, an intensive 1993 field study. The COAST modeling for HGA and the associated SIP are projected to be completed by December, 1996 for submittal in May of 1997. Control strategies developed in this second phase will be based on a more robust data base, providing a higher degree of confidence that the strategies will result in attainment of the ozone NAAQS or target ozone value. A discussion of the schedule for the UAM modeling for the Phase II Attainment Demonstration can be found in Appendix 11-F. Modeling for the B/PA attainment demonstration is underway as well, and is planned to be submitted to EPA along with HGA's in May of 1997.

On January 29, 1996, the EPA proposed a limited approval/limited disapproval for the Texas 15% ROP SIP revision. The EPA proposed a limited approval because the SIP revision will result in significant emission reductions from the 1990 baseline, and will therefore improve air quality. Simultaneously, the EPA proposed a limited disapproval because they believe that the plan fails to demonstrate sufficient reductions to meet the 15% ROP requirements. They also proposed a limited approval/disapproval of the contingency plans (designed to achieve an additional 3% of reductions if needed because a milestone is missed) along the same lines as the 15% action. The EPA stated that some of the control measures submitted along with the SIP revision did not meet all of the requirements of the FCAA

Amendments of 1990, and therefore cannot be approved. The EPA further stated that they were not making a determination at this time whether the state has met its requirements regarding reasonable available control technology (RACT), or any other underlying FCAA Amendments of 1990 requirements. Finally, the EPA proposed approval of the Alternate Means of Control portion of the November 9, 1994 Post-96 SIP submittal, but did not propose action on any other portion of that submittal.

Additionally, on November 29, 1995, the President signed the National Highway Systems Designation Act, which, among other things, prohibited EPA from discounting the creditable emissions from a decentralized vehicle I/M testing program if an approvable conditional I/M SIP revision was submitted to EPA within 120 days of the bill's signature. EPA's Office of Mobile Sources issued guidance stating that they will accept an interim I/M SIP proposal and Governor's letter 120 days after signature of the bill in lieu of an adopted SIP revision. The SIP proposal and letter was submitted to the EPA prior to the March 27, 1996 deadline to meet the 120 day timeframe, and EPA would then parallel process the results of the state and federal public comments to determine whether the SIP revision is approvable.

Part of EPA's determination that the new I/M SIP is approvable is dependant on the program's ability to achieve sufficient creditable VOC reductions so that the 15% ROP can still be achieved. The commission has designed this revised I/M program to fit in with the other elements of the 15% SIP to achieve the full amount of creditable reductions required. The I/M program also achieves creditable reductions for the Post-96 ROP SIP.

Changes to the I/M program have had an impact on the El Paso §818 Attainment Demonstration as well. This demonstration was predicated on the assumption that the I/M program would be implemented as adopted for the 15% SIP. An addendum to the §818 Demonstration is being proposed showing that the basic underlying assumptions of the modeling still pertain despite the revisions to the I/M program.

Adopted on March 9, 1994, the Employee Trip Reduction (ETR) program required that large employers put in place a program to achieve a 25% increase in average vehicle passenger occupancy. This program was made optional for affected states by the signing of H.R. 325 by the President in December of 1995. The commission will repeal the ETR rule, and will ask EPA to remove the ETR program submitted in March of 1994.

The 1990 Adjusted Base Year Emissions Inventory (EI) was submitted on November 12, 1993. It is the official inventory of all emission sources (point, area, on-road and off-road mobile) in the four nonattainment areas. There have been several changes to the EI due to changes in assumptions for certain area and non-road mobile source categories. Changes to the baseline EI have affected the target calculations and creditable assumptions made in the 15% and 9% SIPs.

The Texas Natural Resource Conservation Commission (commission) is required under federal and state mandates to develop a clean-fuel vehicle program which will reduce mobile source emissions. Section 182 (c)(4) of the FCAA Amendments of 1990 required states to either adopt the Federal Clean Fuel Fleet (FCFF) Program outlined in Section 246 of the FCAA Amendments of 1990, or implement a program which demonstrates long-term reductions in ozone-producing and toxic air emissions equal to those achieved under the FCFF Program.

The FCFF Program requires federal, state, local governments, and private fleets to purchase clean-fuel vehicles in areas classified by EPA as being in serious, severe, or extreme non-attainment of the NAAQS for ozone and CO. In Texas, two nonattainment areas (NAAs) would have been affected by the FCFF Program: HGA, and ELP. The federal program mandates increasing percentages of clean-fuel vehicle purchases by the affected fleets in the covered NAAs in model years 1998, 1999, and 2000. The clean fuels are defined under the FCFF as any fuel or power source that enables a vehicle to comply with the clean-fuel vehicle standards. These clean fuels currently include methanol and ethanol containing 85% or more alcohol by volume, reformulated gasoline, diesel, natural gas, liquefied petroleum gas (LPG), hydrogen, and electricity.

The state of Texas, in a committal SIP revision submitted to the EPA on November 15, 1992, opted out of the FCFF Program in order to implement a fleet emission control program designed by the state.

In 1994, the commission submitted the state's opt-out program in a SIP revision to the EPA and adopted rules to implement the Texas Alternative Fuel Fleet program as a substitute to the FCFF program in the areas of Texas classified by EPA as being in serious, severe, or extreme nonattainment of the NAAQS for ozone and CO, which included the HGA, BPA, and ELP areas.

In 1995, the 74th Texas Legislature modified the state’s alternative fuels program (Health and Safety Code, Chapter 382) through the passage of Senate Bill 200. The Legislature facilitated fuel neutrality through the incorporation of the federal low emission vehicle (LEV) standards for certain affected fleets regardless of fuel type. The legislation required the commission to adopt regulations to implement the program.

In response, the commission has adopted regulations to implement the modified program and concurrently has developed a revision to the SIP outlining the state's substitute program to the FCFF program. The commission will submit to EPA the revised SIP for substitution of the FCFF Program. The commission is withdrawing the SIP submitted to EPA in July 1994.

The state's substitute program is focused on the reduction of mobile source emissions through the acquisition of clean-fuel vehicles, which are defined as vehicles certified by EPA to meet or exceed the LEV standards. The state's substitute program will reduce harmful tailpipe emissions from mobile sources through the use of clean-fuel vehicles in the affected areas.

The state's substitute program covers local government and private fleets operated primarily within the serious, severe, or extreme NAAs of Texas. Currently, these NAAs include the HGA, and ELP areas. The BPA nonattainment area was redesignated by EPA to a moderate nonattainment area in 1996. The state's substitute program requires local government and private fleets after September 1, 1998, to ensure that certain percentages of their vehicle purchases be certified by EPA as clean-fuel vehicles. In addition, the affected fleets must maintain certain percentages of these clean-fuel vehicles within their total aggregated fleets. Local government and private fleets affected by the requirements of the state's substitute program may use any vehicle/fuel combination which has been certified by EPA to meet or exceed the federal LEV standards.

Table I - 1 provides a brief comparison of the requirements and issues between the state's substitute program and the FCFF program.

Table I-1. **Comparison of Fleet Programs**

Items	**Federal Clean Fuel Fleet Program** **(FCAAA 1990)**	**The state's substitute program**
Fuel type	Any fuel or power source which allows the vehicle to meet LEV standards	Any fuel or power source which allows the vehicle to meet LEV standards.
Emission standards	LEV required. ULEV, ILEV & ZEV earn credit.	LEV required. ULEV, ILEV & ZEV earn credit.
Covered fleets	Federal, state, local government, and private fleets of 10 or more fleet vehicles which are centrally fueled or capable of being centrally fueled.	Local government fleets: > 15 vehicles; Private persons: > 25 fleet vehicles;
Vehicle class	LDV, LDT ≤ 8,500 lbs GVWR., HDT 8,500– 26,000 lbs GVWR	LDV, LDT ≤ 8,500 lbs GVWR., HDT 8,500– 26,000 lbs GVWR
Exempted vehicles	Emergency, law enforcement, non-road, rental, dealer, test, national security, garaged at residence, and vehicles > 26,000 lbs. GVWR.	Emergency, law enforcement, nonroad, garaged at residence, and vehicles > 26,000 lbs. GVWR.
Covered Areas	Serious, severe, and extreme ozone and/or carbon monoxide nonattainment areas of 250,000 or more (Houston/Galveston, and El Paso).	The Houston/Galveston,and El Paso non-attainment areas
Phase-in Schedule	**LDVs, LDTs:** 30% of purchases in MY 1998 50% of purchases in MY 1999 70% of purchases in MY 2000+ **HDVs:** 50% in MY 1998+	Local government & private: 10% of total fleet by 9/1/98 **or** 30% of purchases after 9/1/98 20% of total fleet by 9/1/00 **and** 50% of purchases after 9/1/00 45% of total fleet by 9/1/02 **and** 90% of purchases after 9/1/02
Exceptions	No.	Yes - Contractual harm, lack of refueling facilities, insufficient financing, or not cost-effective over the life of the vehicle.
Credit trading	Yes - Mobile Source Emission Reduction Credits (MERCs)	Yes - Mobile Source Emission Reduction Credits (MERCs) and Program Compliance Credits (PCCs)
Program incentives	TCM exemptions and MERCs	MERCs & PCCs

Statutory authority for the state's substitute program is found in the Texas Health and Safety Code, Section 382.131 through 382.143. Under the Texas Health and Safety Code, Sections 382.002 and 382.011, the commission is given "the powers necessary or convenient to carry out its responsibilities" to establish and maintain air quality standards. The commission also has broad authority to adopt rules pursuant to the Texas Health and Safety Code, Section 382.017. The state's substitute program is codified in the 30 Texas Administrative Code (TAC), §§114.30, 114.32, through 114.34, and 114.36 through 114.40.

Under the state's substitute program, harmful tailpipe emissions from mobile sources will be reduced through the use of clean-fuel vehicles. The FCAA Amendments of 1990 clearly indicate that it is beneficial for certain vehicles to be clean-fuel vehicles as one strategy to assist in bringing areas into attainment with the NAAQS.

B. OZONE CONTROL STRATEGY

1. POLICY AND PURPOSE (No change.)

2. SUMMARY OF THE PRINCIPAL ELEMENTS ADDRESSED WITHIN THIS PLAN (No change.)

3. OZONE CONTROL PLAN FOR 1979 SIP REVISION (No change.)

4. CONTROL STRATEGY FOR 1979 SIP REVISION (No change.)

5. 1982 HARRIS COUNTY SIP REVISION (No change.)

6. SIP REVISIONS FOR POST-1982 URBAN NONATTAINMENT AREAS (No change.)

7. SIP REVISIONS FOR 1993 RATE-OF-PROGRESS (No change.)

8. SIP REVISIONS FOR MOBILE SOURCES (Revised.)

a. - c. (No change.)

d. Clean Fuel Vehicle Program.

1) Program Implementation

a) Affected Entities

The following entities are subject to all of the requirements and provisions of the state's substitute program:

- All local governments that own, operate, or control a fleet of more than 15 vehicles, and all private persons that own, operate, or control a fleet of more than 25 fleet vehicles, when operated primarily within the following nonattainment areas:

  - El Paso, which includes El Paso County; and

- Houston/Galveston, which includes Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties.

A fleet operates primarily in an affected area if the average annual vehicle miles traveled or operating time in the nonattainment area is greater than 50%.

Unlike the FCFF program, the determination of whether a fleet is affected by the requirements and provisions of the state's substitute program is not based on the location of its refueling facilities. Fleets affected by the state's substitute program may be centrally fueled, capable of being centrally fueled, or fueled at facilities serving both business customers and the general public (i.e. public retail fueling facilities or "service stations"), as defined in the Texas Heath and Safety Code, Section 382.131.

b) Vehicle and Fuel Requirements

(1) Fleet Vehicle Requirements

A fleet vehicle is defined under the state's substitute program as a vehicle required to be registered for use on the public highways of Texas under the Texas Transportation Code, Section 502.002. The Texas Health and Safety Code, Section 382.131, excludes certain vehicle types from its definition of a fleet vehicle and does not subject these vehicle types to the requirements and provisions of the state's substitute program.

For the purposes of the state's substitute program, a fleet vehicle does not include the following vehicle types:

- A vehicle owned or operated by an affected entity that, when not in use, is normally parked at the residence of the individual who usually operates it and is available to such individual for personal use;

- A vehicle owned or operated by an affected entity that, when not in use, is normally parked at the residence of the individual who usually operates it and who does not report to a central location;

- A vehicle that has a gross vehicle weight rating (GVWR) greater than 26,000 pounds;

- Emergency vehicles; and

- Law enforcement vehicles.

(2) Fleet Aggregation

The determination of whether a fleet is affected by the requirements of the state's substitute program is based on the sum of the vehicles operated primarily within the same nonattainment area which are owned, operated, or controlled by the same entity.

The following methods of calculating the sum of affected vehicles should be applied to the following affected entities:

- Local governments should count all vehicles within their fleet to determine fleet size. However, only those vehicles meeting the definition of a fleet vehicle are affected by the LEV requirements.

- Private persons should count only the vehicles within their fleet that meet the definition of a fleet vehicle to determine fleet size.

- Lessors are not responsible for vehicles they lease or rent to other entities.

(3) Technology Requirements

All vehicles used to comply with the fleet implementation schedule requirements of the state's substitute program must be certified by EPA as clean-fuel vehicles, except for those vehicles which have been grandfathered into the state's substitute program. In addition, all vehicles used for compliance with any of the requirements and provisions of the state's substitute program must conform with all applicable federal and state safety requirements.

There are no specific fuel requirements imposed on affected fleets, except for those entities who wish to comply with the requirements of the state's substitute program by using grandfathered vehicles. The commission will allow all affected entities the choice of using any available vehicle/fuel configuration certified by EPA as a clean-fuel vehicle. This provision will provide flexibility for affected fleets in purchasing vehicles to comply with the state's substitute program.

(4) EPA Certification

The commission will rely on the two EPA emission certification procedures for the identification of all clean fuel fleet vehicles systems. A description of these two procedures, EPA's full certification

program and the small volume manufacturers certification program, may be found in 40 Code of Federal Regulations (CFR), Part 86. In general terms, EPA certification is attained when a vehicle engine family/fuel configuration is recognized by EPA as meeting all applicable emission standard requirements through the issuance by the EPA of a certificate of conformity verifying the applicable emission standard for that particular vehicle configuration and engine family.

(5) Dual-Fuel System Guidelines

To be counted toward compliance with the fleet implementation schedule requirements of the state's substitute program, dual-fueled vehicles will be required to be certified by EPA to meet or exceed the dual-fuel LEV standards pursuant to the United States Code (USC), Title 42, Section 7583 and 40 CFR, Part 88. In general terms, these standards require dual-fuel vehicles in the light-duty vehicle classes to meet or exceed the LEV emission standards while operating on the clean fuel portion of the dual-fuel system and meet or exceed the transitional low emission vehicle standards while operating on conventional fuel. However, these standards require dual-fuel vehicles in all other vehicle classes (light-duty trucks and heavy-duty vehicles) to meet or exceed the LEV emission standards when operating on either fuel.

In addition to the EPA guidelines on fuel system conversions, the following policies will apply:

- Fuel system changes to vehicles that have been EPA certified as meeting an applicable emission standard are subject to the tampering prohibitions of the FCAA, Section 203(a)(3). In order to allow vehicle fuel system changes, EPA and the commission established policies for the enforcement of the tampering prohibitions and for the conversion of vehicles. The EPA requirements are contained in the

documents 40 CFR, Part 88 "Clean Fuel Fleet Emission Standards, Conversions, and General Provisions and Amended Heavy-Duty Averaging, Banking, and Trading Credit Accounting Regulation," and 40 CFR, Parts 80, 85, 86, 88, and 600 "Standards for Emissions From Natural Gas-Fueled, and Liquefied Petroleum Gas-Fueled Motor Vehicles and Motor Vehicle Engines, and Certification Procedures for Aftermarket Conversions." The commission rules regarding fuel system changes are contained in 30 TAC, §§114.1, concerning "Maintenance and Operation of Air Pollution Control Systems or Devices Used to Control Emissions from Motor Vehicles." The commission will rely on EPA certification procedures for all vehicles. Dual-fuel systems should follow all applicable EPA guidelines.

- Manufacturers of conversion systems must obtain certificates of conformity from the EPA for all conversion systems used to satisfy the clean-fuel vehicle requirements of the state's substitute program. Manufacturers of conversion systems must follow all certification guidelines found in EPA's full certification procedure or EPA's small volume manufacturers certification program.

- Upon receipt of a certificate of conformity, the manufacturer of the conversion system and the system installer will be considered as one entity for the purposes of warranty responsibilities under the FCAA, Section 206(a), and under related enforcement provisions of the FCAA Amendments of 1990, and USC, Title 40, Section 7525(a).

- The manufacturer/installer of the conversion system will be responsible for any emissions-related failure caused by a problem in the design, manufacture, or installation of the system over the useful life of the vehicle.

- Any installation of an uncertified conversion system on a vehicle intended to be used to comply with the clean-fuel vehicle requirements of the state's substitute program could be considered in violation of state and federal anti-tampering regulations and will not be recognized by the commission for fleet compliance purposes.

c) Fleet Implementation Schedule

(1) Requirements

All affected entities are required by the state's substitute program to ensure that their fleet vehicles are clean-fuel vehicles, certified by EPA to meet or exceed the federal LEV standards, in accordance with the following fleet implementation schedule:

- 30% of fleet vehicle purchases after September 1, 1998 **or** at least 10% of the total fleet vehicles as of September 1, 1998;

- 50% of fleet vehicle purchases after September 1, 2000 **and** at least 20% of the total fleet vehicles as of September 1, 2000; and

- 90% of fleet vehicle purchases after September 1, 2002 **and** at least 45% of the total fleet vehicles as of September 1, 2002.

The fleet compliance requirements of the state's substitute program requiring the acquisition of clean-fuel vehicles does not apply to an affected entity which maintains a proportion of 90% or more clean-

fuel vehicles within its total fleet.

(2) Alternative Methods of Compliance

(A) Credits

Program Compliance Credits (PCCs) or Mobile Emission Reduction Credits (MERCs) may be used to meet the fleet implementation schedule requirements of the state's substitute program.

(B) Dual-fuel Vehicles

In addition, the fleet implementation schedule requirements of the state's substitute program may be met by dual-fuel conversion or the capability of conventional gasoline-powered or diesel-powered vehicles to be certified as clean-fuel vehicles pursuant to the dual-fuel standards found in 40 CFR, Part 88.

(C) Grandfathering of Vehicles

Affected entities may comply with the fleet implementation schedule requirements by using vehicles converted, purchased, leased, or otherwise acquired before September 1, 1998, provided these vehicles are capable of operating on any of the following fuels: electricity, ethanol or ethanol/gasoline blends of 85% or greater ethanol, LPG (propane), methanol or methanol/gasoline blends of 85% or greater methanol, or natural gas. A light-duty vehicle capable of operating on any of those fuels must be certified by EPA to meet or exceed the Tier 1 emission standards in order for an affected entity to use

the vehicle to satisfy the fleet implementation schedule requirements. However, heavy-duty vehicles capable of operating on any of those fuels, converted or otherwise, are only required to meet the original equipment manufacturer emission certification standard in effect at the time of their manufacture in order for an affected entity to use them for compliance with the fleet implementation schedule requirements.

These grandfathered vehicles can be counted towards compliance with the fleet implementation schedule for up to 30% of the affected entity's total fleet while in use by that entity. The purpose of this provision is to provide affected entities the flexibility of using vehicles for compliance with the fleet implementation schedule requirements of the state's substitute program that the entities, voluntarily or in anticipation of being covered by future state regulations, have already acquired or converted to operate on one of the five fuels.

Affected entities using grandfathered vehicles which are equipped with dual-fuel systems should be aware of the tampering provisions of the FCAA. EPA Mobile Source Enforcement Memorandum No. 1A provides an exemption to the tampering provisions of the FCAA, Section 203(a)(3), for vehicle conversions which can demonstrate that the conversion does not increase the emissions of the vehicle. The 1990 FCAA Amendments, under Section 246(d), also exempt the fuel system conversions of conventional vehicles to that of clean-fuel vehicles from tampering liability if the converted vehicle complies with clean-fuel vehicle standards.

d) Fleet Registration, Reporting, and Recordkeeping Requirements

(1) Fleet Registration

By September 1, 1997, or within 90 days of meeting the minimum fleet size to be affected by the state's substitute program, all affected entities are required to register their fleets with the executive director for identification and compliance tracking. Registration includes the submission of the following information to the executive director:

- The entity's name, mailing address, telephone and FAX numbers;
- The name, title, mailing address and telephone number of the specific person to contact if additional information is needed; and
- The total number of vehicles operated by the affected entity. This number should include all vehicles operated by the affected entity including law enforcement vehicles, emergency vehicles, and those vehicles that are excluded by the definition of a fleet vehicle. This does not include vehicles that are not registered for use on a public road.

Upon registration, the executive director will assign each affected entity's fleet a unique fleet identification number that will be used for data submission and compliance tracking purposes.

(2) Fleet Reporting Requirements

All affected entities must submit fleet reports to the the executive director by September 1, 1998, and annually by this date thereafter. These annual fleet reports should cover the period of September 1 through August 31 of each preceding year and should provide the following information:

- The fleet identification number (as assigned by the executive director);
- The total number of vehicles operated by the affected entity, including those vehicles not

covered by the definition of a fleet vehicle;

- The total number of fleet vehicles operated by the affected entity;
- The vehicle license number, model year, manufacturer, model type, vehicle identification number, GVWR, fuel type(s) and certified emission standard of each vehicle used for compliance with the fleet implementation schedule requirements of the state's substitute program;
- The annual vehicle miles traveled (VMT) or an estimate of the annual VMT for each affected fleet vehicle;
- If the affected fleet vehicle is a dual-fueled vehicle, documentation demonstrating the percentages of the vehicle's VMT while operated on each fuel; and
- A demonstration of compliance with the applicable fleet implementation schedule.

Affected entities may submit the information required in the annual fleet report on all the vehicles in their fleet, including those vehicles not affected by this program, if this method of reporting is more convenient for the entity.

All affected entities may submit their annual fleet reports to the executive director using the official Fleet Reporting Forms, or on a copy or similar reproduction. Affected entities may also submit these fleet reports on 3.5 inch DOS formatted computer diskettes in a format as agreed to by the executive director, or by other electronic media as agreed to by the executive director.

(3) Recordkeeping

All affected entities must maintain copies of their annual fleet reports on site at the reported fleet

address for a minimum of three years and should make these available to the executive director or local air pollution control agencies having jurisdiction in the area upon request. Affected entities should start keeping these copies beginning September 1, 1998. They should include the information as supplied in the fleet registration and annual fleet reports.

e) Emission Standard Requirements

All affected entities shall be required to ensure that the fleet vehicles used for compliance with the fleet implementation requirements of the state's substitute program meet or exceed the following appropriate emission standards:

- The clean-fuel vehicle standards applicable under the Clean Air Act, Subchapter II, Part C, as amended (USC, Title 40, Section 7581 et seq.); and emission limits at least as stringent as the applicable low emission vehicle (LEV) standards for the clean-fuel fleet program under 40 CFR, Sections 88.104-94 and 88.105-94, as published in the Federal Register, September 30, 1994. Other applicable emission standards within these regulations include the following:

  - the Ultra Low Emission Vehicle Standards (ULEV); and
  - the Zero Emission Vehicle Standards (ZEV).

- The inherently low emission vehicle (ILEV) standards under the 40 CFR, Section 88.311-93, as published in the Federal Register, March 1, 1993.

(1) Low Emission Vehicle (LEV)

The LEV standards provide greater emission reduction benefits than the current standards for tailpipe emissions of non-methane hydrocarbon (NMHC) and NO_x. The state's substitute program will require light-duty vehicles and light-duty trucks to comply with the LEV standards, as contained in 40 CFR, Part 88. Heavy-duty vehicles will be required to comply with the EPA combined NMHC+NO_x g/Bhp-hr LEV emission standard, also found in 40 CFR, Part 88. These clean-fuel vehicles will also be required to meet all other applicable emission standards and requirements for CO, particulate matter, smoke, and evaporative emissions for the model year during which they are certified and produced, as specified by the FCAA, Section 242(b).

(2) Additional Emission Standards

The ULEV, ILEV, and ZEV standards will further reduce emissions beyond the current Tier I or LEV emission standards. These emission standards may be used for compliance purposes and for the generation of MERCs and PCCs.

The ULEV emission standards for light-duty vehicles are more stringent than the LEV standards. The reduction in emissions over the LEV standard is attributed to reduced non-methane organic gas (NMOG), and CO emissions through improved emission control devices. The combined NMHC+NO_x ULEV standard for heavy-duty vehicles is found in 40 CFR, Part 88.

Light-duty vehicles certified to the ILEV standard further reduce the ozone precursor emissions through adherence to more stringent evaporative emission standards. Therefore, ILEV certified vehicles must pass more stringent emission control measures than a LEV. The standard established by EPA for evaporative emissions applicable to the ILEV standard is 5.0 grams per test with the evaporative

control system disconnected. In most cases, light-duty vehicles certified to the ILEV standard must meet the LEV exhaust standards for NMOG and CO, and the ULEV exhaust standard for NO_x. Heavy-duty ILEV vehicle emission standards are found in 40 CFR, Part 88. These heavy-duty vehicles will also be required to pass more stringent emission control measures.

Light-duty ZEVs are defined as vehicles that have no measurable exhaust or evaporative emissions of any regulated pollutant. At present, only battery-powered electric vehicles are expected to be able to qualify as ZEVs. Heavy-duty ZEVs must also have no measurable exhaust or evaporative emissions of any regulated pollutant. The use of heavy-duty ZEVs is voluntary and these vehicles may be used for compliance with the state's substitute program and will be able to generate MERCs and PCCs. The heavy-duty ZEV standards are found in 40 CFR, Part 88.

(3) Emission Standards for light-duty vehicle (LDVs) and Trucks

Tables C-1 and C-2 in Appendix C display the emission standards for the LDV and light-duty truck categories.

f) Exceptions

Exceptions to the requirements of the state's substitute program are established in the Texas Health and Safety Code, Section 382.136, and may be granted for a period of up to two years. Exceptions to the fleet implementation schedule requirements of the state's substitute program are intended to prevent economic harm to affected entities through the implementation of the state's substitute program.

All affected entities may apply to the executive director for an exception to these requirements through the submission of an exception application. Forms and instructions for preparing an exception application will be furnished without charge. Applicants may submit the required information either on the exception application forms or on similarly formatted documents. Applicants will be notified if additional information is needed to process an application. The applicant should confer with the reviewing staff on any questions concerning preparation of the application.

Affected entities may request exception applications and a guidelines manual from the Mobile Source Division at the following address: Texas Natural Resource Conservation Commission, MC-166, P.O. Box 13087, Austin, Texas, 78711-3087. The exception application and guidelines manual supplied by the commission contains all the data submission forms and instructions for completion. Forms are arranged according to the type of exemption being requested. The exception application must be accompanied by current fleet registration and annual report information when submitted for processing.

Affected entities will not be considered in violation of the fleet implementation schedule requirement of the state's substitute program while an exception application is under review by the executive director if the exception application has been received by the executive director before the applicable compliance date.

(1) Fixed Price Contract Exception

The executive director may grant exceptions from the fleet implementation schedule requirements of the state's substitute program if a firm engaged in fixed price contracts with public works agencies can demonstrate that compliance with the fleet implementation schedule requirements of the state's

substitute program would result in substantial economic harm to the firm under a contract entered into before September 1, 1997.

The firm applying for this exception must submit to the executive director supporting documentation and correspondence relevant to the nature of the exception including, but not limited to, copies of the relevant contracts and a demonstration of how and by what means would the firm be harmed by complying with these requirements and provisions of the state's substitute program.

(2) Inadequate Refueling Facilities Exception

The executive director may grant exceptions from the fleet implementation schedule requirements of the state's substitute program if the executive director determines that the affected vehicles will be operating primarily in an area that does not have or cannot reasonably be expected to establish adequate refueling or power sources necessary for the operation of clean-fuel vehicles.

Entities applying for this exception must submit supporting documentation and correspondence relevant to the nature of the exception including, but not limited to:

- The name of the county where the affected entity's fleet primarily operates;
- The physical address of the nearest refueling station that provides fuels necessary for the operation of clean-fuel vehicles; and
- A demonstration of the normal operating range of the entity's fleet sufficient for the executive director to determine that the affected entity's fleet will be operating primarily in an area that does not have or cannot be reasonably expected to establish adequate refueling for the entity's

normal fleet operational needs.

(3) Unavailability of Financing for Refueling Exception

The executive director may grant exceptions from the fleet implementation schedule requirements of the state's substitute program if the affected entity is unable to secure financing provided by or arranged through the proposed supplier or suppliers of the fuel or power source necessary for the operation of clean-fuel vehicles sufficient to cover the additional costs of such fueling or powering.

Entities applying for this exception must submit supporting documentation and correspondence relevant to the nature of the exception including, but not limited to:

- If available, a description of the financing offered by the proposed supplier, or suppliers, of the fuels necessary for the operation of clean-fuel vehicles sufficient to cover the additional cost of such fueling; and
- A demonstration of why the entity applying for the exception is unable to secure financing to cover the additional cost of fueling the clean-fuel vehicles required by the state's substitute program.

(4) Cost Comparison Exception

The executive director may grant exceptions from the fleet implementation schedule requirements of the state's substitute program if the total projected net costs attributed to the fueling, conversion or

replacement, and operation of the clean-fuel vehicles is reasonably expected to exceed the comparable costs attributed to the fueling, conversion or replacement, and operation of conventional vehicles when measured over the expected useful life of the clean-fuel vehicles and after taking into consideration any available state or federal funding or incentives for the use of clean-fuel vehicles.

Entities applying for this exception must submit supporting documentation and correspondence relevant to the nature of the exception including, but not limited to:

- the types of vehicles needed; and
- a demonstration of how the projected net costs of using the clean-fuel vehicles, after the identification of state and federal funding or incentives for the use of fuels required to fuel clean-fuel vehicles if any, exceeds the comparable costs of using conventional vehicles over the useful life of such vehicles.

(5) Exception Application Policy

All entities affected by the state's substitute program may apply for an exception to the fleet implementation schedule requirements of this program by providing sufficient documentation as needed to verify the necessity for an exception when submitting an exception application to the executive director. The exception applicant shall have the sole responsibility for providing the executive director with current and accurate documentation to substantiate the exception application. The executive director will grant exceptions from the fleet implementation schedule requirements of the state's substitute program if it is determined that the applicant has provided sufficient documentation to verify the necessity for such an exception. The executive director will deny any exception requests that are

deemed to contain insufficient proof of the need for such an exception. Entities applying for an exception must evaluate all clean-fuel vehicle/fuel configurations currently available for the types of vehicles used in the fleet when submitting an exception application. Exception requests will be reviewed on a case-by-case basis dependant upon individual circumstances.

(6) Application Review Process

Exception applications will be reviewed by the executive director in accordance with the following process and subject to the following provisions:

- The executive director may request additional information in order to evaluate an exception application;

- Exceptions applications will be accepted at any point within the twelve months preceding a fleet compliance deadline; and

- Applicants may apply for a renewal of the exception by submitting a new exception application.

(7) Issuance of an Exception Notice

Upon the approval of an application for an exception to the fleet implementation schedule requirements of the state's substitute program, the executive director will issue the applicant a written notice of exception. The notice of exception shall include the following information:

- the assigned fleet registration number;

- the type of exception granted;

- the name and address of the applicant;

- the compliance date for which the exception may be applied; and

- the time duration of the exception, not to exceed two years.

The entity receiving a notice of exception should maintain a copy of the notice on site at the reported fleet address for the duration of the exception period and should make such copies available to the executive director or local air pollution control agencies having jurisdiction in the area upon request.

(8) The Effect of an Exception

An exception issued to an entity will be used to defer the issuance of a Notice of Violation due to the affected entity's inability to comply with the fleet implementation schedule requirements of the state's substitute program. A copy of the notice of exception will be kept on file by the Mobile Source Division until the date of the affected entity's next fleet compliance period. Entities wishing to renew an exception must submit a new application.

(9) Enforcement Due to Exception Denial

If an affected entity applies for an exception before the applicable fleet implementation schedule deadline, and that exception request is subsequently denied by the executive director after the deadline has passed, then the affected entity could be deemed in violation. A Notice of Violation may be issued at that time to the affected entity for not complying with the fleet implementation schedule requirements of the state's substitute program. The executive director will coordinate with the agency's regional managers, as well as the Compliance and Enforcement, and Litigation Support Divisions, to ensure the expeditious and effective resolution of any violations of these requirements.

2) MONITORING

The commission will require the submission of annual reports, containing fleet data as described in the Fleet Reporting section of this document, from the affected entities in order to determine air quality benefits from the use of clean-fuel vehicles or any other reduced emission vehicles designated for compliance with the state's substitute program. The fleet data as collected will be used to monitor fleet compliance, to calculate emission reductions, and to determine the program's feasibility and effectiveness.

3) PROGRAM ENFORCEMENT

a) Enforcement Authority

The Texas Health and Safety Code, Chapter 382, also known as the Texas Clean Air Act (TCAA), provides the commission with broad enforcement powers in Section 382.011. The executive director is charged with the duty to enforce the TCAA, the rules promulgated under the TCAA, and orders of the

commission.

The Enforcement Rules of the commission provide for enforcement through administrative proceedings, civil lawsuits, and criminal proceedings. Through administrative proceedings, the commission can impose orders to achieve compliance accompanied by penalties of up to $10,000 per day per violation. The commission may also pursue civil legal proceedings through the Office of the Attorney General. Fines of up to $25,000 per day per violation, injunctions, court orders, and cost of litigation can be assessed in a civil action under the TCAA. Criminal enforcement may also be initiated through the Attorney General, with fines of up to $300,000 and imprisonment of up to 5 years as possible penalties.

In addition to the general penalty provisions, the rules of the commission require the denial of marketable credits in certain situations. Violation of the state's substitute program rules may also result in denial of credits.

b) Specific Enforcement Items

Enforcement of the emission standards and fleet implementation schedule requirements of the state's substitute program will be done through financial penalties and/or credit denial. The entities affected by the state's substitute program will be required to provide information regarding their fleet operation.

Penalties will be imposed on affected entities for tampering with the engine configuration and emission control systems, including exhaust components. In the case of converted vehicles, the vehicle manufacturer, the clean fuel conversion system manufacturer, and the installer will be required to

provide a warranty to the entity owning the vehicle which, in a proven tampering situation, will be subject to being declared void.

Vehicles may undergo random periodic inspection to detect any tampering. In addition to potential voiding of the warranty, financial penalty and credit denial are enforcement options.

Compliance with the fleet implementation schedule's purchase or percentage requirements will be monitored through reporting. Entities affected by the state's substitute program must report to the executive director compliance with these requirements. Inadequate reporting, fraud, abuse, or other findings that jeopardize the integrity of the state's substitute program will be liable for the full range of enforcement actions and penalties discussed previously.

4) EQUIVALENCY DETERMINATION METHODS

In accordance with EPA requirements, the state's substitute program must demonstrate long-term reductions of ozone-producing and toxic air emissions equal to those achieved under the FCFF Program. This section summarizes the methods used to demonstrate the equivalency of the state's substitute program with the FCFF. A detailed analysis of the assumptions, calculation methods, and clean-fuel vehicle (CFV) projections are presented in Appendix B.

The approach adopted was to evaluate clean-fuel vehicle projections from both programs after being operational over the long term (defined as 10 years by the EPA) in order to allow the programs to mature and achieve maximum emission reduction potential. Therefore, this determination was based on estimations for the years 1998 through 2008. Assumptions regarding fleet data (i.e., fleet size,

turnover rate, growth rate, waiver rate, and effectiveness rate) were derived from studies prepared by various consultants under contract and by in-house staff.

Equivalency between the state's substitute program and the FCFF program was determined by comparing the estimated number of clean-fuel vehicles that would be in use as a result of implementing each program. The state's substitute program will result in the use of more clean-fuel vehicles than would have been in use under the FCFF program. Therefore, the resulting emission reductions from the state's substitute program will also be greater than reductions derived from the FCFF program. This equivalency determination shows that the state's substitute program will generate more clean-fuel vehicles than the FCFF program. Table B-1 in Appendix B shows that by the year 2003, at least 6591 more clean-fuel vehicles will be in use as a result of adopting the state's substitute program in place of the FCFF program.

5) CREDIT TRADING PROGRAM

a) General Methodology and Uses

The state's substitute program includes a provision for the calculation of MERCs and PCCs for affected entities which exceed the program’s percentage and emission requirements. MERCs and PCCs may be redeemed, sold, traded or transferred within the same NAA to satisfy the state's substitute program requirements. This section provides detailed information on the generation and use of MERCs and PCCs.

(1) MERCs

MERCs are a part of an economic incentive program to help reduce vehicle emissions of VOC and NO_x. This program is intended to provide additional flexibility for business, to develop innovative strategies to control mobile source emissions, and to reduce the total cost of compliance with the Clean Air Act.

MERCs are defined as any enforceable, permanent, and quantifiable emission reduction (exhaust and/or evaporative) generated by a mobile source through the state's substitute program or the Accelerated Vehicle Retirement Program, which has been banked in accordance with the rules of the commission Emissions Bank. These emission reductions are voluntary, and must be in addition to compliance with requirements of state and federal regulations. MERCs can be purchased, traded or sold to meet clean air mandates.

Only LEV certified vehicles are required to be purchased under the state's substitute program; affected entities purchasing ULEV, ILEV, and ZEV certified vehicles in lieu of LEV certified vehicles will receive credits for exceeding the LEV requirements. The purpose of the credit program is to provide flexibility for the affected entities. It recognizes that some affected entities may, at times, find it attractive to buy more clean-fuel vehicles or to buy lower emitting vehicles than required, if in so doing they can get credit against future purchase requirements, or can sell the credits to someone else who is not able to make the required clean-fuel vehicle purchases.

These credits can be used to meet a fleet’s own compliance, for fleet-to-fleet trades, or for fleet-to-stationary source trades. Fleet-to-fleet MERCs are assigned to individual vehicles, where applicable. Fleet-to-fleet MERCs will be based on the difference between a combination of the NMOG and NO_x standards. Fleet-to-stationary source MERCs must be expressed in terms of the total amount of

emissions reduced in a year, on a pollutant by pollutant basis.

Although an entity can generate both MERCs and PCCs for the same vehicle, only one type of credit associated with the generating vehicle may be used for compliance, trading, buying, or selling. This will allow maximum program flexibility for the affected entities while benefitting air quality.

(2) PCCs

PCCs are for use by affected entities in complying with the state's substitute program. The Texas Heath and Safety Code, Section 382.142, defined the number of PCCs for vehicles certified to specific emissions standards as follows:

- 1 LEV = 1 PCC;
- 1 ULEV = 2 PCCs; and
- 1 ILEV or ZEV = 3 PCCs.

Only entities that are subject to the requirements of the state's substitute program may generate PCCs. PCCs will be granted to the affected entities for every clean-fuel vehicle that exceeds the requirements of the fleet implementation schedule of the state's substitute program. The additional PCCs generated by clean-fuel vehicles certified by EPA to the ULEV, ILEV, or ZEV emission standards may be used in achieving the entity's own compliance with the fleet implementation schedule of the state's substitute program. If an entity generates more PCCs than needed for compliance, then the entity may trade or sell the PCCs to other fleets for use in achieving their compliance.

b) MERC/PCC Generation Criteria

The MERC program is an option for any entity with a fleet operating primarily in the ELP and HGA nonattainment areas. Entities and individual private persons in these areas may generate MERCs, regardless of their inclusion in the state's substitute program.

Entities outside of nonattainment areas may purchase clean-fuel vehicles. However, because these areas do not have specific requirements for reducing air pollution at this time, there is no market for credits generated outside of the nonattainment areas. Therefore, these credits cannot be banked.

(1) Generation of MERCs and PCCs

In order to obtain MERCs and PCCs, entities must exceed the requirements of the state's substitute program. Entities may exceed the requirements through any of the following actions:

- The acquisition of vehicles that meet more stringent emissions standards than the LEV standards. This includes vehicles certified to the ULEV, ILEV, ZEV standards.

- The use of more clean-fuel vehicles than otherwise required by the state's substitute program.

- The use of clean-fuel vehicles in a category or class not covered by the requirements of the state's substitute program. This includes, but is not limited to, law enforcement vehicles, emergency vehicles, and vehicles heavier than 26,000 lbs. GVWR.

- The use of clean-fuel vehicles earlier than required by the state's substitute program (prior to 1998).

(2) Requirements for Credit Generation

The generation of credits by entities in Texas is guided by the regulations included in 30 TAC, §§114.38- 114.40. In addition to the rule, the following information will be considered in relation to the credit programs:

- Only one application is required for an entity in a specific area, regardless of the type of credit requested and the basis of the application. An entity may request both MERCs and PCCs using the same application.

- Although entities may estimate the amount of credit they anticipate, this is by no means required, and all credit estimations are subject to executive director review. Interactive electronic reporting forms will be made available which will assist fleets in determining the amount of credit for which their fleet is eligible.

- The Mobile Source Division will act as a clearinghouse for the trading and selling of credits. The details of the trade or sale are at the discretion of the entities involved.

- Entities wishing to generate credits for vehicles that are not covered by the program should include these vehicles with their fleet report. However information on non-covered vehicles should be submitted in a separate section from covered fleet vehicles. This will ensure that non-covered vehicles are not inadvertently treated as covered vehicles.

- Entities which have obtained and are operating under an exception from the requirements of state's

substitute program may not trade or sell credits. Entities operating under an exception, although considered in compliance with the program, are not exceeding the fleet implementation percentage requirements. The use of cleaner vehicles than required by these entities will be counted toward their own compliance, regardless of the terms of the exception.

c) Credit Trading Restrictions

The following restrictions on credit trading should be considered prior to the negotiation of trades:

- *Nonattainment Area Specific:* PCCs and MERCs generated in a nonattainment area may be used only in that nonattainment area.

- *Separation of Light & Heavy-Duty Weight Classes:* MERCs may not be traded between the light-duty and heavy-duty weight classes for compliance purposes. Provisions in the FCAA (Section 246 (f)(2)(B)) preclude the trading of MERCs between the heavy-duty and light-duty weight classes. This is because of differences in the operation and use of the two types of vehicles. However, entities may trade MERCs freely among the light-duty subclasses. For example, an entity could trade a light-duty vehicle MERC for light-duty truck 2's compliance, but could not trade a heavy-duty vehicle MERC for a light-duty vehicle's compliance.

- *Credit trading within the Heavy-Duty weight class*: MERCs generated by the purchase of a heavy-duty vehicle in a particular weight subclass may be used to demonstrate compliance with the required heavy-duty vehicle purchases for the same or lighter weight subclasses.

These MERCs may not be used to demonstrated compliance with the required heavy-duty vehicle purchases for vehicles of heavier weight subclasses than the weight subclass of the vehicle which generated the credits. For example, an entity with heavy heavy-duty vehicles could generate credits and sell them to an entity needing credits for a medium heavy-duty vehicle; however, a credit from a medium heavy-duty vehicle could not be sold and used in place of a heavy heavy-duty LEV. Trading from a lighter to a heavier subclass could increase emissions where the credit using vehicle had a longer useful life, increased fuel consumption or greater emission than the credit generating vehicle.

- *The Emissions Bank is only for VOCs and NO_x:* The Emissions Bank was created to provide flexibility with the growing number of requirements on ozone nonattainment areas and sources of VOCs and NO_x. Although some vehicles do provide a reduction in carbon monoxide and/or particulate matter, there is currently no market or emissions bank for these emissions.

- *Trading to stationary sources:* Stationary source regulations require the reduction of emissions by a specified number of tons each year. Therefore, entities wishing to trade credits tradable to stationary sources must reduce at least 1 ton of VOCs or NO_x emissions per year. Entities may aggregate the emission reductions from their total fleet in order to generate the amount of reductions from each pollutant needed for trades to stationary sources. Increments of less than 1 ton will not be certified by the bank. Because of the various factors which must be considered by stationary sources that purchase the credits, it is highly unlikely that credits in increments of less than 1 ton would be purchased.

d) Uses of Credits

The dollar value of a MERC or PCC depends entirely upon the demand for credits. MERCs may be used by other fleets and by stationary sources. PCCs may be used only by other fleets, subject to the state's substitute program.

Although a fleet may generate both a MERC and a PCC for any qualified vehicle, only one type of credit may actually be used. For example, if Fleet Owner A purchases 3 extra LEVs, he may apply for and receive 3 PCCs and 3 fleet-to-fleet MERCs. If he sells 3 PCCs to Fleet Owner B for her fleet's compliance, Fleet A's fleet-to-fleet MERCs would no longer be available for use. If Fleet Owner A instead sells 3 fleet-to-fleet MERCs to Fleet Owner B, the 3 PCCs would no longer be available for use. This will prevent using the same reductions to account for two fleets' compliance.

(1) Fleet Compliance

Entities may use credits banked as fleet-to-fleet MERCs or PCCs to show compliance with the requirements of the state's substitute program. In any fleet-to-fleet trade the purchaser of credit should base the amount of credit purchased on the number of low emission vehicles needed to demonstrate compliance. Some entities may choose to purchase a few ILEVs, ULEVs or ZEVs and use the additional emissions benefit toward their own compliance. Other entities may choose to forego buying any low emitting vehicles and purchase enough fleet-to-fleet MERCs or PCCs from other fleets to meet the applicable percentages. Thus, the compliance demonstration will be unique for each entity.

(2) Stationary Source Compliance

Stationary source credit use focuses on the mass of emission reductions generated in a given year. In this type of trade the stationary source will determine the emissions per year that must be offset. Trades involving stationary sources must comply with the offset ratios established by the Federal Clean Air Act Amendments of 1990. Stationary sources are responsible for determining the amount of credit they need for compliance with specific regulations.

(3) Credit Lifetime

During the initial years of the state's substitute program, from 1998 through 2002, all credits generated through the credit program will have a lifetime of two years. This lifetime factor has been determined because of the increasing percentage requirements through 2002 and because entities may need these vehicles for their own compliance with the state's substitute program after the first two years.

This policy will allow entities some flexibility in the use of MERCs without jeopardizing air quality. If the vehicles are still in surplus of the new requirements, the entity may request that new MERCs or PCCs be granted. This will allow entities to sell their MERCs, without making it more difficult for the credit generating entity to meet the increasing percentage requirements of the state's substitute program. After 2002, the requirements stabilize and credits may last for the expected useful life of the vehicle, normally five years.

e) Administrative Requirements

(1) Fleet Registration and Reporting for Credits:

In order to award credits, the executive director must have a current fleet report, showing information on each fleet vehicle in the fleet used for compliance and credit generation. This may be submitted using an official reporting form, either in printed or electronic formats, or on a copy or a similar reproduction chosen by the entity. All fleet reports must contain the information listed in the Fleet Reporting section of this document and as required in the Texas Administrative Code, Title 30, §114.36. Although not required, it is anticipated that entities will choose to apply for credits at the time of their annual report, thus requiring only one report each year.

(2) Credit Application and Certification

Credits may be requested as part of the annual reporting requirements. The executive director will determine if the information given in the compliance report and credit application is adequate to evaluate the credit application. If additional information is needed, the executive director will issue a letter requesting the information necessary to continue the review. The applicant should respond as promptly as possible to ensure that credits are granted in a timely manner. Once any requested information is received, the credit review process will continue. Approval of credits will result in certification of MERCs or PCCs.

Upon certification by the executive director, each vehicle will be issued an account number and a credit certificate indicating the standard to which the vehicle is certified; the weight class of the vehicle; the

amount of emissions reduced per year; the number of years the emission reductions will be generated; and the number of light-duty or heavy-duty fleet-to-fleet MERCs. The applicable number of PCCs will also be included on the certificate.

(3) Emissions Banking

Owners of credits will be issued account numbers and will be listed by the commission on its Internet world wide web page: 'http://www.tnrcc.state.tx.us/air/'. Potential purchasers, both stationary sources and fleets, can view the list of owners and the associated amounts of credit. Those without access to the Internet may contact the Mobile Source Division directly for assistance in locating owners of credit. Purchasers for all types of credits will contact the owners directly.

The two uses of credits warrant different methods of banking the credits. MERCs used for stationary sources will depreciate in the bank on the anniversary date of their certification. For example, after the first year, a vehicle projected to reduce emissions for five years will only have four years left.

Banking of credits for fleet compliance will be different. Because compliance is based on 2-year increments, each credit will be banked as a 2-year fleet-to-fleet MERC or a PCC, thus expiring in two years.

Once a trade has been negotiated, the owner of the credit must notify the executive director of the trade and mail the credit certificate to the executive director. The executive director will then reissue the credits to the new owner. An account number and credit certificate will also be issued to the new owner. A new certificate will be issued to the credit generator for any unsold credits. For each MERC

sold, the following information will be recorded in the Emissions Bank: the name and location of the seller; the name and location of the buyer; and the creation and expiration dates of the MERC.

Once a MERC is sold, any corresponding PCCs will no longer be available for future use. This will prevent duplicate use of credits. Likewise, if PCCs are sold, any corresponding MERCs will no longer be available for use.

Under the state's substitute program, the executive director may revoke approval of a PCC or a MERC if it is determined that the requirements are not being met. Credits may also be canceled if the credit generating vehicle is removed from fleet service either voluntarily or accidentally. If the removed vehicle is not replaced by at least an equally clean vehicle, then the credit for that vehicle will be adjusted or revoked.

(4) Binding Contracts

MERCs also may be generated through binding contracts with the commission to produce credits in the future. Each contract must specify the period in which the MERCs will be generated and the specific number of credits to be generated. In addition, these contracts must name the EPA as a third-party beneficiary of the contract. Credits generated through binding contracts will be banked in the Mobile Emission Reduction Credit Fund. The commission may revoke a MERC generated under the binding contract provisions if it is found that the requirements of the contract have not been met. Binding contracts to generate MERCs may be enforced in the courts of the State of Texas by order of specific performance. Provisions for binding contracts are in the Texas Health and Safety Code, Section 382.143 and in the 30 TAC, §114.40. Any person found to be in violation of the Mobile Emission

Reduction Credit Fund will be subject to a civil penalty of up to $25,000 per violation.

6) RESOURCES

The Mobile Source Division has gained substantial experience working with the regulated community and the providers of clean-fuel vehicle technology and fuels under the auspices of the state's substitute program. Currently, for the Fiscal Year of 1997, seven staff members will be dedicated to the state's substitute program. The commission has collected data and established a fleet database necessary for the successful implementation of the state's substitute program.

Appendix A: ACRONYMS

CFR - Code of Federal Regulations

CFV - Clean Fuel Vehicle

CO - Carbon monoxide

EPA - U.S. Environmental Protection Agency

FCAAA - Federal Clean Air Act Amendments of 1990

FCFF - Federal Clean Fuel Fleet Program

GVWR - Gross vehicle weight rating

HCHO - Formaldehyde

HDT - Heavy-duty truck

HDV - Heavy-duty vehicle

ILEV - Inherently low emission vehicle

LDT - Light-duty truck

LDV - Light-duty vehicle

LEV - Low emission vehicle

LPG - Liquefied petroleum gas, "propane"

MERC - Mobile Emission Reduction Credit

NAA - Nonattainment Area

NAAQS - National Ambient Air Quality Standards

NMHC - Non-methane hydrocarbon

NMOG - Non-methane organic gases

NO_x - Oxides of nitrogen

PCC - Program Compliance Credit

PM - Particulate matter

SIP - State Implementation Plan

TAC - Texas Administrative Code

TAFF - Texas Alternative Fuel Fleet

TCAA - Texas Clean Air Act

TNRCC - Texas Natural Resource Conservation Commission

TW - Total weight of vehicle

ULEV - Ultra-low emission vehicle

USC - United State Code

VMT - Vehicle miles traveled

VOC - Volatile organic compounds

ZEV - Zero-emission vehicle

Appendix B: TECHNICAL EVALUATION

Equivalency Determination Through Vehicle Population Calculations

B.1. Technical Approach

The State of Texas opted out of the FCFF program in order to implement a fleet emission control program that closely matched the existing state alternative fuel program.

Private fleets represent approximately 80% of the total fleets covered by the state's substitute program. Therefore, this analysis was conducted solely on private fleet data. If emission reductions from private fleets affected by the state's substitute program are determined to be the same or higher than the same category of fleets affected by the FCFF program, then benefits from the other fleet categories covered by the state's substitute program will be equivalent to reductions derived from the same categories within the FCFF program.

Prediction of the number of CFVs purchased per year for both programs began at the official starting date of each program; September 1, 1997 for the federal program and September 1, 1998 for the state's substitute program. Staff determined that modeling results can be attained by performing an in-depth analysis of both programs. This goal can be better achieved by basing this determination on calendar years instead of model years. Modeling on a calendar year basis examines the percentage of clean-fuel vehicle purchases for each year in two parts: purchases before and purchases after September 1 of each year.

After September 1, 1998, the state's substitute program requires affected entities to ensure that some percentages of both their total fleet and their new purchases are clean-fuel vehicles. The FCFF program only requires percentages of new purchases to be clean-fuel vehicles. In order to perform a meaningful and effective modeling of emission benefits derived from the two programs, percentages of new clean-fuel vehicle purchases, which are required in both programs, were used for the vehicle projection calculations.

Staff determined that equivalency can be demonstrated because the state's substitute program results in a greater number of clean-fuel vehicles purchased for the years 1998 to 2007. The requirement that affected entities maintain some percentages of their total fleets covered by the state's substitute program as clean-fuel vehicles is an additional variable that is expected to enable the program to achieve emission reductions above the equivalency level.

Estimates of the total number of clean-fuel vehicles purchased for both programs were calculated by using a spreadsheet designed by commission staff to model different fleet parameters in each program. For the state's substitute program, fleet size, total number of vehicles, growth rate, turnover rate, waiver rate, grandfathering rate, and program effectiveness were modeled. Fleet size, total number of vehicles, growth rate, turnover rate, centralized refueling, and program effectiveness were modeled in the FCFF program.

These modeling parameters were applied to the total number of vehicles attributed to each program in order to obtain the affected vehicle population for each year. The clean-fuel vehicle population for each year was obtained by multiplying the affected vehicle population by the required new purchase percentages. A detailed analysis of the calculation methods are presented in Section B.2.b.

B.2. Vehicle Projection Calculations

B.2.a. Calculation Parameters

Several types of data were needed in order to perform the calculations.

- **Fleet turnover rate & fleet growth rate**:

Vehicles were retired after three years of service. This represents a turnover rate of 33% per year. This rate was obtained from a technical report published by the EPA entitled, “Lifetime Emissions for Clean-Fuel Fleet Vehicles” [EPA-AA-SRPB-93-01]. Staff assumed a growth rate of 2.2%. This rate was obtained from a study performed for the commission by Radian Corporation entitled, “Emission Reduction from Using Alternative Transportation Fuels”.

- **Effectiveness rate:**

Both programs were assumed to be 80% effective. This is the default rate assigned by the EPA to state implementation plans with no specific rates of effectiveness.

- **Waiver rate:**

An average waiver (exception) rate of 30% was assumed for the state's substitute program. The commission has determined that the waiver rate in the initial years of the program may be high, due to the lack of clean-fuel vehicles, however, the waiver rate in the later years of the program will be lower, due to greater availability of clean-fuel vehicles. Therefore, it is the commission's estimation that the overall waiver rate will be approximately 30% over the ten year period of evaluation. Staff will adjust this rate to reflect actual fleet data when the state's substitute program is fully operational.

- **Centralized refueling rate:**

According to the EPA, 50% of the fleets with 10 or more vehicles are centrally fueled (as published in the October 3, 1991 Federal Register, Vol. 56, No. 192, p. 50198). Therefore, the centralized refueling rate of 50% was attributed to fleets of ten or more for the analysis since only fleets that are centrally fueled, or capable of being centrally fueled, are affected by the federal program.

- **Initial vehicle population:**

The initial vehicle population for both programs was developed by commission staff from fleet data received from the Texas Railroad Commission (RRC). The RRC data included only vehicles registered in the covered NAAs for vehicle model years 1988 to 1993. Fleets of 10 or more were used to represent the FCFF program and fleets of more than 25 were used to represent the state's substitute program.

- **Affected vehicle population & previous year's vehicle population:**

The affected vehicle population was obtained by multiplying the previous year's vehicle population against the growth rate plus one. The affected vehicle population for the year before represents the previous year's vehicle population.

- **Growth amount:**

This is the number by which the vehicle population grows for each year. It is derived by multiplying the previous year's vehicle population against the growth rate.

- **Turnover amount:**

This is the number of vehicles that will be retired from the fleet each year. It is derived by multiplying the affected vehicle population against the turnover rate.

- **Total purchase:**

This is the total number of vehicles predicted to be purchased each year. The number includes conventional and clean-fuel vehicles. It is the sum of the growth amount and the turnover amount.

- **Percentage of new CFVs purchased & fractions of the calender year:**

The state's substitute program in effect has two different new purchase percentages for certain years. These are the percentage required before September 1 and the percentage required after September 1. For instance, after September 1, 1998, 30% of new purchases are required to be clean-fuel vehicles. After September 1, 2000, 50% of new purchases are required to be clean-fuel vehicles. This means that at the end of the year 2000, purchases before September 1 will be weighted by 30% and purchases after September 1 by 50%. The above example also shows that at the end of the year 2000, 25% of the total population representing one fourth of the year, will be weighted against new clean-fuel vehicle purchases after September 1, and 75% of the total population will be weighted against purchases before September 1.

- **Waiver amount & centralized refueling amount:**

In order to account for fleets that may be granted exceptions from the state's substitute program, the average waiver amount was deducted from the total number of clean-fuel vehicles purchased for each year. In order to count only the vehicles that were assumed to be centrally refueled or capable of being centrally refueled in the FCFF program, the initial number of vehicles attributed to the FCFF program at the beginning of the modeling period was multiplied by the centralized refueling rate. The product of this equation was the number used as the initial vehicle population in modeling the FCFF program.

- **Number of CFVs purchased before & after September 1:**

The number of clean-fuel vehicles purchased for each year was subdivided into purchases before and purchases after September 1 of each year. This was done in order to account for the different purchase requirements before and after September 1 of each year. For instance, at the end of the year 2000, the number of new clean-fuel vehicles purchased before September 1 was derived by multiplying the total purchases (conventional and clean-fuel vehicles) against the percentage required before September 1, the fraction representing the period of year before September 1, and the effective rate. This means that if total purchases was 1200, then clean-fuel vehicles purchased before September 1, 2000 would be:

  - 1200 x 30% x 75% x 80% = 216

Purchases after September 1 was obtained by multiplying total purchases against the percentage required after September 1, the fraction representing the period of year after September 1, and the effective rate.

- **Total CFVs purchased:**

This is the total number of clean-fuel vehicles predicted to be purchased during the calendar year. It is the sum of clean-fuel vehicles purchased before September 1 and those purchased after September 1 of each year. For the state's substitute program, this number was then discounted by the waiver rate to obtain the final number for the year.

- **Grandfathering:**

The state's substitute program allows affected entities to count vehicles acquired before September 1, 1998, (up to a maximum of 30% of their total affected fleet) toward compliance with their applicable fleet percentage requirements. With an assumed turnover rate of 33% per year, and a program start date of September 1, 1998, these grandfathered vehicles would have to be completely (100%) discounted from the state's substitute program fleet by September 1, 2000. In order to accomplish this, the total clean-fuel vehicles purchased was discounted by 30% in 1998, 20% in 1999, and 10% in the year 2000.

B.2.b. Calculation Methods

This section shows how the different fleet parameters were modeled to obtain estimates of the affected vehicle population and CFV purchases for each year. CFV purchases from each program for each year are then added up to obtain totals for the period 1998 to 2008.

All calculations were performed in a spreadsheet that was designed by the commission staff using the following steps:

- Calculate the affected vehicle population using the formula:
    - $Avp = Pyp \times (1 + Gr \div 100)$

Where,

- Avp = affected vehicle population for each year,
- Pyp = previous year's vehicle population,
- Gr = vehicle population growth rate per year.

- Calculate the growth amount using:
    - $Ga = Pyp \times Gr$

Where,

- Ga = the amount by which vehicle population is increased per year,
- Pyp = previous year's vehicle population,
- Gr = vehicle population growth rate per year.

- Calculate the turnover amount using:
    - $Ta = Pyp \times Tr$

Where,

- Ta = the amount by which vehicle population is reduced per year due to turnover,

- Pyp = previous year's vehicle population,
- Tr = turnover rate per year.

- Calculate the total number of vehicles purchased for each year using:
  - $Tp = Ga + Ta$

Where,

- Tp = predicted number of vehicles purchased per year (conventional & CFVs),
- Ga = the amount by which vehicle population is increased per year,
- Ta = the amount by which vehicle population is replaced per year due to turnover.

- Calculate the number of CFVs purchased before September 1 using:
  - $Lb1 = Tp \times Pb1 \times Fb1 \times Er$

Where,

- Lb1 = number of CFVs purchased before September 1 of some years,
- Tp = predicted number of vehicles purchased per year (conventional & CFVs),
- Pb1 = required percentage of new CFVs purchased before September 1,
- Fb1 = applicable fraction of year before September 1,
- Er = effectiveness rate.

- Calculate the number of CFVs purchased after September 1 using:
    - *La1 = Tp x Pa1 x Fa1 x Er*

Where,

- La1 = number of CFVs purchased after September 1 of some years,
- Tp = predicted number of vehicles purchased per year (conventional & CFVs),
- Pa1 = required percentage of new CFVs purchased after September 1,
- Fa1 = applicable fraction of year after September 1,
- Er = effectiveness rate.

For state's substitute program, use the formula below for all years except the first three.

- Calculate the total number of CFVs purchased for each year using:
    - *TCFV = (Lb1 + La1) - Wa*

Where,

- TCFV = total predicted number of CFVs purchased per year,
- Lb1 = predicted number of CFVs purchased before September 1,
- La1 = predicted number of CFVs purchased after September 1,
- Wa = the amount by which the number of CFVs is reduced due to exceptions.

Use the following equations to calculate the total predicted number of CFVs purchased during the first three years of the program by removing the percentage of vehicles allowed to be grandfathered into the program *(assuming a 3 year turnover rate)*:

- For 1998: $TCFV = TCFV - (TCFV \times 30\%)$
- For 1999: $TCFV = TCFV - (TCFV \times 20\%)$
- For 2000: $TCFV = TCFV - (TCFV \times 10\%)$

Where,

- TCFV = total predicted number of CFVs purchased per year.

For FCFF program use the following equation below for all years:

- Calculate the total number of CFVs purchased for each year using:
  - $TCFV = (Lb1 + La1)$

Where,

- TCFV = total predicted number of CFVs purchased per year,
- Lb1 = predicted number of CFVs purchased before September 1,
- La1 = predicted number of CFVs purchased after September 1.

B.3. Results: Projected Clean-fuel Vehicle Populations

The estimated results from this equivalency determination are presented in this section. The number of light-duty clean-fuel vehicles acquired per year for all the NAAs under each program are shown in Table B-1. Figure B-1 compares the rate of clean-fuel vehicle growth per year under each program assuming a 30% waiver rate for the state's substitute program and a 50% centralized refueling rate for the FCFF program.

B.4. Interpretation of Results

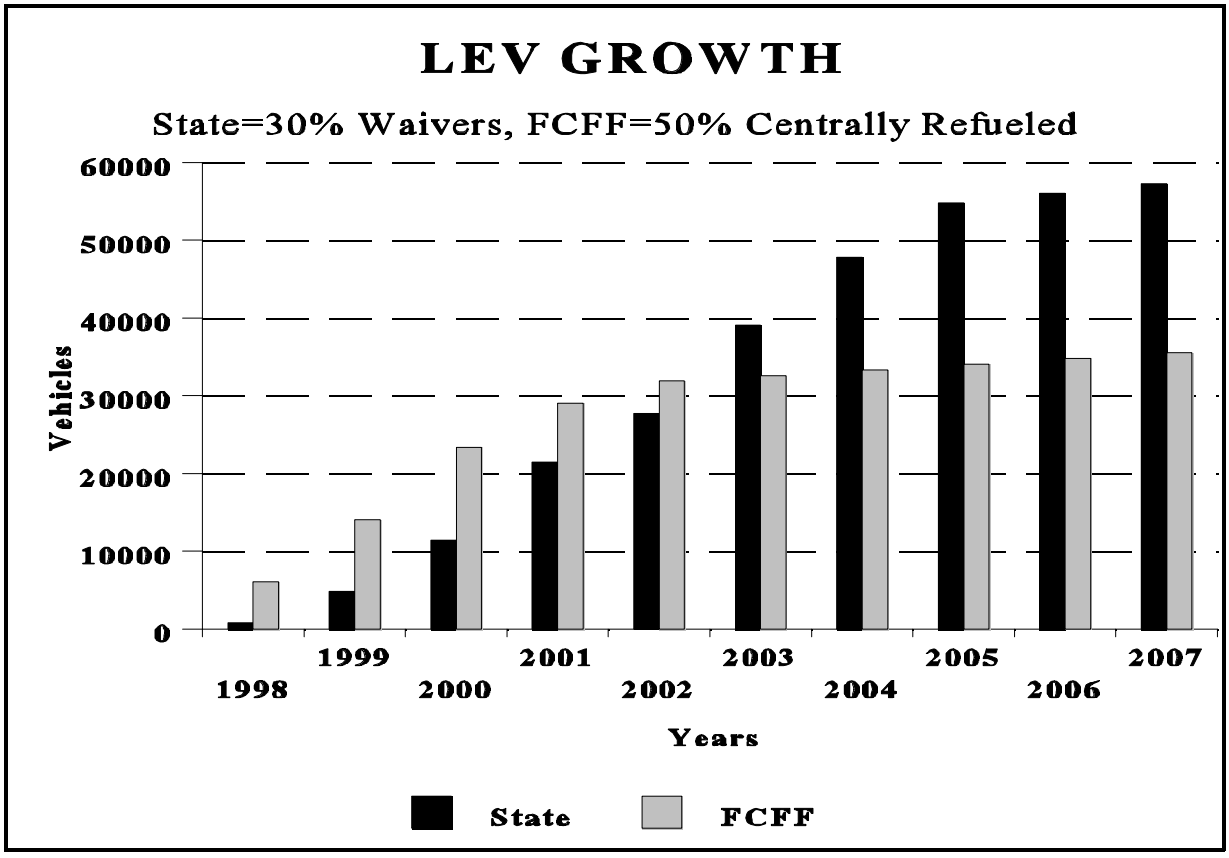
The fleet analysis presented in the Results section clearly indicates that the state's substitute program will result in higher percentage of CFVs than the FCFF program in all affected nonattainment areas in Texas when examined over the long term (10 years).

B.5. Tables

TABLE B-1. Comparison of Estimated Total Light-Duty CFV For Private Fleets Under the FCFF and State Programs

Estimated Total Light-Duty CFVs		
Years	**FCFF**	**State Opt-out Program**
1998	6,020	764
1999	14,011	4,857
2000	23,363	11,411
2001	29,011	21,487
2002	31,876	27,687
2003	32,578	39,053
2004	33,294	47,815
2005	34,027	54,827
2006	34,776	56,033
2007	35,541	57,266
TOTAL	**274,497**	**321,200**

FIGURE B-1. **Comparison of the Rate of CFVs Growth Per Year Under the FCFF and State's substitute program**



Appendix C : EMISSION STANDARD TABLES

Table C-1 Emission Standards for LDVs and Trucks, in Grams per Mile.

VEHICLE WEIGHT CLASS		EXHAUST EMISSION STANDARDS in grams/mile									
		NMOG		CO		NO_x		PM		HCHO	
		LEV	ULEV	LEV	ULEV	LEV	ULEV	LEV	ULEV	LEV	ULEV
50,000 miles	Light-duty vehicles and trucks ≤3,750 lbs. TW (≤6,000 lbs. GVWR)	0.075	0.040	3.4	1.7	0.2	0.20	0.08	0.08	0.015	0.008
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (≤6,000 lbs. GVWR)	0.100	0.050	4.4	2.2	0.4	0.40	0.08	0.08	0.018	0.009
	Light-duty trucks ≤3,750 lbs. TW (>6,000 lbs. GVWR)	0.125	0.075	3.4	1.7	0.4	0.20	n/a	n/a	0.015	0.008
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (>6,000 lbs. GVWR)	0.160	0.100	4.4	2.2	0.7	0.40	n/a	n/a	0.018	0.009
	Light-duty trucks >5,750 lbs. and ≤8500 lbs. TW (>6,000 lbs. GVWR)	0.195	0.117	5.0	2.5	1.1	0.60	n/a	n/a	0.022	0.011
100,000 miles	Light duty vehicles and trucks ≤3,750 lbs. TW (≤ 6,000 lbs. GVWR)	0.090	0.055	4.2	2.1	0.3	0.30	0.08	0.04	0.018	0.011
	Light-Duty trucks >3,750 lbs. and ≤ 5,750 lbs. TW (≤ 6,000 lbs. GVWR)	0.130	0.070	5.5	2.8	0.5	0.50	0.08	0.04	0.023	0.013
	Light-duty trucks ≤3,750 lbs. TW (>6,000 lbs. GVWR)	0.180	0.107	5.0	2.5	0.6	0.30	0.08	0.04	0.022	0.012
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (>6,000 lbs. GVWR)	0.230	0.143	6.4	3.2	1.0	0.50	0.10	0.05	0.027	0.013
	Light-duty trucks >5,750 lbs. and ≤8500 lbs. TW (>6,000 lbs. GVWR)	0.280	0.167	7.3	3.7	1.5	0.80	0.12	0.06	0.032	0.016

● ILEV standards equal LEV standards for NMOG and CO; and ULEV standards for NQ In addition, ILEV standards require evaporative emissions of no more than 5 grams per test with the vapor recovery system disconnected.

CO - carbon monoxide
GVWR - gross vehicle weight rating (GVWR)
HCHO - formaldehyde
NMOG - non-methane organic gas
NO_x - oxides of nitrogen
PM - particulate matter
TW - total weight
ULEV - ultra-low emission vehicle

TABLE C-2 Exhaust Emission Standards for Dual-Fueled and Flexible-Fueled Vehicles

VEHICLE WEIGHT CLASS		NMOG Exhaust Emission Standards for Flexible and Dual-Fueled (grams/mile)	
		When Operating on Clean Alternative Fuel	When Operating on Conventional Fuel
50,000 miles	Light-duty vehicles and trucks ≤3,750 lbs. TW (≤6,000 lbs. GVWR)	0.075	0.125
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (≤6,000 lbs. GVWR)	0.100	0.160
	Light-duty trucks ≤3,750 lbs. TW (>6,000 lbs. GVWR)	0.125	0.25
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (>6,000 lbs. GVWR)	0.160	0.32
	Light-duty trucks >5,750 lbs. and ≤8500 lbs. TW (>6,000 lbs. GVWR)	0.195	0.39
100,000 miles	Light-duty vehicles and trucks ≤3,750 lbs. TW (≤6,000 lbs. GVWR)	0.090	0.156
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (≤6,000 lbs. GVWR)	0.130	0.200
	Light-duty trucks ≤3,750 lbs. TW (>6,000 lbs. GVWR)	0.180	0.36
	Light-duty trucks >3,750 lbs. and ≤5,750 lbs. TW (>6,000 lbs. GVWR)	0.230	0.46
	Light-duty trucks >5,750 lbs. and ≤8500 lbs. TW (>6,000 lbs. GVWR)	0.280	0.56