

REVISIONS TO THE STATE IMPLEMENTATION PLAN (SIP)
FOR THE CONTROL OF OZONE AIR POLLUTION

1993 RATE-OF-PROGRESS SIP
FOR THE
DALLAS/FORT WORTH, EL PASO, BEAUMONT/PORT ARTHUR,
AND HOUSTON/GALVESTON OZONE NONATTAINMENT AREAS

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
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CONTENTS

SECTION VI: CONTROL STRATEGY

A. INTRODUCTION

B. OZONE CONTROL STRATEGY

1. POLICY AND PURPOSE

- a. Primary Purpose of Plan
- b. Attainment of Ozone Standard (No change.)
- c. Scope of Plan (No change.)
- d. Deletion of Nonessential Requirements (No change.)

2. SUMMARY OF THE PRINCIPAL ELEMENTS ADDRESSED WITHIN THIS PLAN

- a. Definition of Attainment and Nonattainment Areas (No change.)
- b. Responsibilities for Plan Development (No change.)
- c. Establishing Baseline Air Quality
- d. Required Emission Reductions
- e. Sources of Emission Reductions

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

- a. General
- b. Ozone Nonattainment Area Designations in Texas
- c. Planning Procedures and Consultation
- d. Degree of Nonattainment - Selection of Air Quality Baseline
- e. Relationship Between Air Quality Baseline (Design Value) and Emission Reductions Required to Attain Ambient Air Quality Standard
- f. Identification of Emission Changes

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

- a. General
- b. Estimated Emission Reductions
- c. New Source Review

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

- a. Ozone Control Plan
- b. Control Strategy

CONTENTS (Cont.)

6. SIP REVISIONS FOR POST-1982 URBAN NONATTAINMENT AREAS
(No change.)
 - a. Ozone Control Plan
 - b. Dallas County Ozone Control Strategy
 - c. Tarrant County Ozone Control Strategy
 - d. El Paso County Ozone Control Strategy
7. SIP REVISIONS FOR 1993 RATE-OF-PROGRESS
 - a. Ozone Control Plan
 - b. Dallas/Fort Worth Ozone Control Strategy (No change.)
 - c. El Paso Ozone Control Strategy (No change.)
 - d. Beaumont/Port Arthur Ozone Control Strategy
 - e. Houston/Galveston Ozone Control Strategy
8. SOCIAL AND ECONOMIC CONSIDERATIONS OF THE PLAN
(No change.)
 - a. Health Effects
 - b. Social and Public Welfare Effects
 - c. Economic Effects
 - d. Effects on Energy Consumption
 - e. Evaluation of the 1982 SIP for Harris County
 - f. Evaluation of the Post-1982 SIP for Urban Nonattainment Areas
 - g. Evaluation of the 1993 SIP Revisions
9. FISCAL AND MANPOWER RESOURCES (No change.)
10. HEARING REQUIREMENTS (No change.)
 - a. Requirements
 - b. Notification
 - c. Public Hearings for 1979 SIP Revisions
 - d. Public Hearings for 1982 SIP Revisions
 - e. Public Hearings for Post-1982 SIP Revisions
 - f. Public Hearings for 1993 SIP Revisions

LIST OF TABLES

TABLE #	TABLE NAME	PAGE #
1	Classification of Ozone Nonattainment Areas in Texas	15
2	Local Health Departments in Texas Nonattainment Areas	18
3	Regional Planning Organizations in Texas Nonattainment Areas	20
4	Example--Final Base Year Inventory	26
5	Example--Rate-Of-Progress (ROP) Base Year Inventory	29
6	Example--Adjusted Base Year Inventory	30
7	Example--Calculation of Total Reductions By 1996	32
8	Volatile Organic Compounds (VOC) Emission Reduction Calculations Dallas/Fort Worth Ozone Nonattainment Area	37
9	VOC Emission Reduction Calculations El Paso Ozone Nonattainment Area	38
10	VOC Emission Reduction Calculations Beaumont/Port Arthur Ozone Nonattainment Area	39
11	VOC Emission Reduction Calculations Houston/Galveston Ozone Nonattainment Area	40
12	Banking Offset Ratios in Texas Nonattainment Areas	44
13	Reductions Due to Rule Effectiveness (RE) Improvements--Area Sources	55
14	Reductions Due to RE Improvements--Point Sources	56
15	Anthropogenic Emissions in the Dallas/Fort Worth Area	85

LIST OF TABLES (continued)

TABLE #	TABLE NAME	PAGE #
16	Reductions Due to RE and Reasonably Available Control Technology (RACT), for Point and Area Sources--Dallas/Fort Worth	88
17	Estimates Towards ROP State Implementation Plan (SIP), Dallas/Fort Worth	93
18	Anthropogenic Emissions in the El Paso Area	99
19	Reductions Due to RE and RACT for Point and Area Sources--El Paso	103
20	Estimates Towards ROP SIP, El Paso	107
21	Anthropogenic Emissions in the Beaumont/Port Arthur Area	115
22	Reductions Due to RE and RACT for Point and Area Sources--Beaumont/Port Arthur	117
23	Estimates Towards ROP SIP, Beaumont/Port Arthur	122
24	Anthropogenic Emissions in the Houston/Galveston Area	127
25	Reductions Due to RE and RACT for Point and Area Sources--Houston/Galveston	129
26	Estimates Towards ROP SIP, Houston/Galveston	135
27	Growth Estimates for the Texas Natural Resource Conservation Commission (TNRCC) Office of Air Quality	141
28	Public Hearings for the Phase I ROP SIP	142
29	Public Hearings for the Phase II ROP SIP	142

LIST OF FIGURES

FIGURE #	FIGURE NAME	PAGE #
1	1990 Nonattainment Area VOC Emissions by Major Source Category	36

LIST OF APPENDICES

(Appendices that have not changed from the Phase I submittal are listed as N/C and not included in this SIP package.)

APPENDIX #	APPENDIX NAME	PAGE #
A	State Implementation Plan (SIP) Revision Victoria Ozone Nonattainment Area Commitment To Petition For Redesignation After Successful Completion of Attainment Monitoring Period	(N/C)
B	Texas Air Control Board (TACB) Rule Effectiveness Determination	(N/C)
C	Reasonably Available Control Technology (RACT) Fix-ups	(N/C)
D	RACT Catch-ups	(N/C)
E	Discussion of the Control Measure Catalog	(N/C)
F	SIP Revisions for the Stage II Vapor Recovery Program	(N/C)
G	Summary of Reductions from Benzene National Emissions Standards for Hazardous Air Pollutants (NESHAPS)	(N/C)
H	SIP Revision Rate-of-Progress Phase II Commitment/Contingency Measures	(N/C)
I	Formulas and Calculations of Creditable Emission Reductions	I-1
J	SIP Revision Dallas/Fort Worth Ozone Nonattainment Area -- Commitment To Use Urban Airshed Modeling For Attainment Demonstration	(N/C)
K	Summary of Transportation Control Measures for Dallas/Fort Worth and Houston/Galveston Ozone Nonattainment Areas	(N/C)
L	Mobile 5a Documentation for Mobile Source Reductions Credits (Adjusted Base Year)	L-1
M	Mobile 5a Documentation for I/M Corrections	M-1

LIST OF APPENDICES

(Appendices that have not changed from the Phase I submittal are listed as N/C and are not included in this SIP package.)

APPENDIX #	APPENDIX NAME	PAGE #
N	Support Documentation for Shutdown Credits	(N/C)
C	Mobil 5a Documentation for Mobile Source Reductions Credits (Projected)	O-1

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 1977 Amendments to the Federal Clean Air Act (FCAA) 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 1977 FCAA Amendments.

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.

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

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.

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 describes 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 must also 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. In light of revised EPA guidance, the complete list of contingency measures will be submitted by November 15, 1994. The appropriate compliance date was 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 Texas Natural Resource Conservation Commission (TNRCC).

B. OZONE CONTROL STRATEGY

1. POLICY AND PURPOSE

a. Primary Purpose of Plan

The primary purpose of this plan is to accomplish the VOC emission reductions required by the 1977 FCAA and EPA and to comply with the 1990 Amendments to the FCAA. Such VOC emission reductions are required by EPA in areas which exceed the ozone NAAQS; in the expectation that reductions in accordance with technical guidance will lower ozone concentrations sufficiently to achieve the standard.

The plan provides for the reduction of VOC emissions by 15% net of growth in the nonattainment areas by November 15, 1996.

b.-d. (No change.)

2. SUMMARY OF THE PRINCIPAL ELEMENTS ADDRESSED WITHIN THIS PLAN

a.-b. (No change.)

c. Establishing Baseline Air Quality

In order to determine the ozone air quality in relation to the NAAQS in each nonattainment area, EPA required that data from monitoring done in 1975, 1976, and 1977 be examined for the 1979 revisions. Data from 1978 was also considered when it became available. For the 1982 revisions, EPA required that monitoring data collected in 1978, 1979, and 1980 be examined. For Post-1982 revisions, EPA required that data collected in 1981, 1982, and 1983 be examined. Supplemental data collected in 1984 was also used to estimate the concentrations of certain air quality parameters.

The 1990 FCAA Amendments required each Governor to submit a list that designated nonattainment areas in each state. It required that data be collected for three complete years to determine the design values for each area (design values for Texas nonattainment areas are given in §VI.B.7.a.2)). For the initial nonattainment classification, data was used from 1987, 1988, and 1989.

The 1993 ROP, the primary target of this SIP, will be demonstrated by a reduction in the Emissions Inventories (EIs) for the nonattainment areas. Therefore, monitoring data will not be used in this SIP revision for this purpose.

Procedures for selecting or calculating baseline air quality to be used in plan preparation were promulgated by EPA and are discussed and used within this plan.

d. Required Emission Reductions

Emission reduction requirements for each nonattainment area were related to the degree by which baseline air quality exceeds the NAAQS for ozone. Reduction requirements are calculated by the use of algorithms or models that rely on measured data as well as certain assumed values. These procedures and the various factors involved in each are discussed in detail in subsequent sections concerned with specific SIP revisions.

Previously, EPA required that emission reduction requirements were to be calculated only for urban nonattainment areas. The 1990 FCAA Amendments recognized that often suburban and rural (perimeter) counties can contribute to ozone nonattainment in an area. Therefore, in most cases, the concept of nonattainment was expanded to include entire Consolidated Metropolitan Statistical Areas (CMSA) or Metropolitan Statistical Areas.

The FCAA Amendments required all ozone nonattainment areas classified as moderate and above to submit a SIP revision by November 15, 1993 which describes in part how an area intends to decrease VOC emissions by 15% from the 1990 Base Year, net of

growth, by November 15, 1996. In addition to the 15% reduction, states must also 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 contingency measures would be implemented immediately should any area fall short of the 15% goal.

e. Sources of Emission Reductions

Substantial quantities of VOC are emitted by business, industry, consumer products, and motor vehicles. The plan identifies the contributions from known sources and sets forth a program of control measures required to demonstrate a 15% reduction, net of growth, of VOC levels in the nonattainment areas.

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 (New.)
 - a. Ozone Control Plan
 - 1) General

This section of the plan describes the actions taken to provide the VOC emission reductions necessary to satisfy EPA requirements for complying with the FCAA Amendments of 1990. The goal of this and related regulatory action is to achieve attainment of a 15% reduction, net of growth, in the nonattainment areas of Dallas/Fort Worth, El Paso, Houston/Galveston, and Beaumont/Port Arthur between the base year of 1990 and the target year of 1996. This 15% reduction, along with the attainment demonstration required by November 15, 1994, are designed to eventually bring nonattainment areas into attainment of the NAAQS for ozone.

The guidelines require states to compile extensive air quality and emissions data. They specify techniques and procedures to be used by states in measuring emissions levels, determining the

amount of emission reductions required, and demonstrating attainment of the NAAQS.

a) Requirement For 15% Reduction

The most important change to the SIP was the requirement of a 15% reduction in the emission of VOC. This reduction is seen as a meaningful step toward attainment of the NAAQS. The FCAA Amendments required all ozone nonattainment areas classified as moderate and above to submit a SIP revision by November 15, 1993 which describes in part how an area intends to decrease VOC emissions by 15% from the 1990 Base Year, net of growth, by November 15, 1996. In addition to the 15% reduction, states must also 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.

2) Ozone Nonattainment Area Designations in Texas

EPA established the NAAQS for ozone. The ozone standard is 0.12 parts per million averaged over one hour and not to be exceeded by more than three episodes over three years. Any area which exceeds the NAAQS is designated as a nonattainment area. Areas designated nonattainment are classified based on the severity of the problem.

Each area designated nonattainment for ozone is classified as marginal, moderate, serious, severe I or II, or extreme. The classification an area receives is based on the "design value" for the area which is calculated using monitoring results from monitoring stations in the nonattainment area and applying a mathematical algorithm. Attainment dates are based primarily on the severity of the classification. The classifications of ozone nonattainment areas in Texas are presented in Table 1.

TABLE 1

Classification of Ozone Nonattainment Areas in Texas

CLASSIFICATION	NONATTAINMENT AREA	DESIGN VALUE	ACTUAL VALUE	ATTAINMENT DATE
Incomplete/ No Data	Victoria	----	----	11/15/95
Marginal	None	.121-.137		11/15/93
Moderate	Dallas/ Fort Worth	.138-.159	.14	11/15/96
Serious	Beaumont/ Port Arthur El Paso	.160-.179	.16 .17	11/15/99
Severe I		.180-.190		11/15/05
Severe II	Houston/ Galveston	.190-.279	.22	11/15/07
Extreme	None	.280 & above		11/15/10

a) Addition of Perimeter Counties

The 1990 FCAA Amendments recognized that often suburban and rural (perimeter) counties can contribute to ozone nonattainment in an area. Therefore, it stated that any area exceeding the NAAQS would be designated as nonattainment and classified according to the severity of nonattainment. The counties affected in the Houston/Galveston area are Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, and Waller. The El Paso area consists of only El Paso County. The Beaumont/Port Arthur area includes the counties of Jefferson, Hardin, and Orange. The Dallas/Fort Worth area includes Dallas, Collin, Denton, and Tarrant Counties, but the other counties in the metropolitan area

(Ellis, Johnson, Kaufman, Parker, and Rockwall) have elected to participate in the planning process for transportation control measures. Rules affecting stationary sources will be uniformly applied throughout each nonattainment area. Mobile source rules may vary somewhat according to whether a county is urban or rural. Rural counties may require less extensive mobile source controls.

b) Victoria County Commitment

The General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 (General Preamble) published in the Federal Register (57 FR 13510) stated that for areas with incomplete or no data, EPA interpretation of the FCAA §172 requirement is that applicable revisions to the SIP are to be submitted three years from designation under §107(d)(4)(A)(ii). Victoria County was originally designated nonattainment for ozone in the Federal Register dated March 3, 1978 (43 FR 8962). As a result of the 1990 Amendments to the FCAA, Victoria County was designated as an "Incomplete or No Data Ozone Nonattainment Area" on November 15, 1990; therefore, the county retained its prior ozone nonattainment designation by operation of law. The Victoria County SIP revision is due three years later or November 15, 1993. The SIP revision for Victoria County is located in Appendix A of this document. The General Preamble further stated that the attainment date for incomplete or no data areas is

November 15, 1995. Due to the lack of monitoring data, the design value and actual value of the ambient air quality was not calculated.

3) Local Consultation

The Texas Clean Air Act (TCAA) established the Texas Air Control Board (TACB) as the official air pollution control agency for the State of Texas. Senate Bill 2, passed in 1991, merged the TACB with the Texas Water Commission (TWC) into the Texas Natural Resources Conservation Commission (TNRCC) effective September 1, 1993. The former TACB became the Office of Air Quality under the TNRCC.

The TCAA also grants authority to city and/or county governments to conduct air pollution control programs within their jurisdiction. There are two basic types of local programs, those operating through the local health departments and those operating through regional planning organizations.

a) Local Officials and Health Departments

The primary tasks of programs operating through the local health departments consist of air quality monitoring and compliance enforcement. Letters of agreement between the TNRCC and the local agency define the requirements of each local air pollution

program. Other levels of local government, such as local politicians, judiciary, and city staff often play a role in advising the TNRCC and assisting in the public hearings process.

Table 2 lists the five local health departments which operate air pollution programs in conjunction with the TNRCC.

TABLE 2

Local Health Departments in Texas Nonattainment Areas

LOCATION	DEPARTMENT	ADDRESS
Dallas	Environmental Control Program (214) 948-4435	320 E. Jefferson Dallas, TX 75201
Fort Worth	Environmental Management Department (817) 871-8079	Fort Worth City Hall 1000 Throckmorton Fort Worth, TX 76102
Houston	Bureau of Air Quality Control (713) 640-4200	7411 Park Place Houston, TX 77087
Galveston	Galveston County Health District (409) 948-7221	P.O. Box 939 La Marque, TX 77568
El Paso	El Paso City-County Health District (915) 543-3509	222 South Campbell El Paso, TX 79901

b) Responsibilities and Planning Processes of
the Councils of Governments and Metropolitan
Planning Organizations

The regional planning agencies located within the Texas nonattainment areas assist the TNRCC with the development of the SIP to produce the most effective and affordable solutions to the regions' air pollution problems. Much of the responsibility for planning and implementing certain control programs, especially transportation control measures (TCM), has been delegated to the appropriate regional and metropolitan planning organizations. In the Houston/Galveston and Dallas/Ft. Worth nonattainment areas, the regional and metropolitan planning organizations (MPOs) are responsible for compiling their own data and performing computer modeling to evaluate various measures. In El Paso and Beaumont/Port Arthur, the TNRCC performs the modeling function, but the regional organizations play a role in the planning and implementation process. The regional organizations in the nonattainment areas are listed in Table 3.

TABLE 3

Regional Planning Organizations in Texas Nonattainment Areas

LOCATION	AGENCY	ADDRESS
Dallas/ Fort Worth	North Central Texas Council of Governments (817) 640-3300	616 Six Flags Drive Arlington, TX 76005-5888
Houston/ Galveston	Houston-Galveston Area Council (713) 627-3200	P.O. Box 22777 Houston, TX 77227-2777
Beaumont/ Port Arthur	South-East Texas Regional Planning Commission (409) 727-2384	3501 Turtle Creek Port Arthur, TX 77642
El Paso	Metropolitan Planning Organization (915) 541-4000	2 Civic Center Plaza El Paso, TX 79901-1196

4) Identification of Emission Changes

a) Emissions Inventory

The 1990 Amendments to the FCAA required that emissions inventories be prepared for ozone nonattainment areas. Since ozone is photochemically produced in the atmosphere when VOC are mixed with NO_x and CO in the presence of sunlight, it is important that the planning agency compile information on the important sources of these precursor pollutants. It is the role of the EI to identify the source types present in an area, the amount of each pollutant emitted, and the types of processes and control devices employed at each plant or source category. The EI provides data for a variety of air quality planning tasks, including

establishing baseline emission levels, calculating the 15% reduction target, developing control strategies for achieving the required emissions reductions, inputting emissions into air quality simulation models, and tracking actual emissions reductions against the established emissions growth and control budget. The total inventory of emissions of VOC, NO_x, and CO for an area is summarized from the estimates developed for five general categories of emissions sources.

(1) Point Sources

Stationary point sources are defined for inventory purposes in the nonattainment areas as industrial, commercial, or institutional plants/operations responsible for generating annual VOC emissions of 10 tons per year (TPY) or greater and/or 100 TPY or greater of NO_x or CO emissions. To collect emissions and industrial process operating data for these plants, the TNRCC sends out EI questionnaires (EIQ) to all sources identified as having the potential to generate emissions triggering EI reporting requirements. Companies are asked to report not only emissions data for all emissions generating units and emission points, but also the type and amount of materials used in each process which may result in emissions, such as painting and degreasing materials, storage tank materials, or fuels combusted. Information is also requested in the EIQ such as process equipment descriptions; emissions control devices currently in use; and emissions point

parameters, including stack location, height, and exhaust gas flow rate. All data submitted via the EIQ is then subjected to rigorous quality assurance procedures by the engineering staff of the EI Section before entry into the agency's point source data base.

(2) Minor and Area Sources

To capture information about sources of emissions that fall below the point source reporting levels and are too numerous or too small to identify individually, calculations have been performed to estimate emissions from these sources on a source category or group basis. Minor and area sources are commercial, small-scale industrial, and residential categories of sources which use materials or operate processes which can generate emissions. Area sources can be divided into two groups characterized by the emission mechanism: evaporative emissions or fuel combustion emissions. Examples of evaporative losses include: printing, industrial coatings, degreasing solvents, house paints, leaking underground storage tanks, gasoline service station underground tank filling, and vehicle refueling operations. Fuel combustion sources include stationary source fossil fuel combustion at residences and businesses, as well as outdoor burning, structural fires, and forest fires. These emissions, with some exceptions, may be calculated by multiplication of an established emission factor (emissions per unit of activity) times the appropriate

activity or activity surrogate responsible for generating emissions. Amount of population is the activity most commonly used for many area source categories while other activity data include amount of gasoline sold in an area, employment by industry type, and acres of cropland harvested.

(3) On-Road Mobile Sources

On-road mobile sources consist of automobiles, trucks, motorcycles, and other internal combustion engine powered vehicles traveling on roadways in the nonattainment areas. Combustion-related emissions are estimated for vehicle engine exhaust and evaporative emissions are estimated for the fuel tank and other evaporative mechanisms on the vehicle. Emission factors have been developed using the most current version of EPA's mobile emissions factor model, MOBILE5a. Various inputs are provided to the model to simulate the vehicle fleet driving in each particular nonattainment area. These inputs include such parameters as vehicle speeds by roadway type, vehicle registration by vehicle type and age, percentage of vehicles in cold start mode, percentage of miles travelled by vehicle type, type of I/M program in place, and gasoline vapor pressure. All of these inputs have an impact on the emission factor calculated by the MOBILE program, and every effort is made to input parameters reflecting local conditions where possible. To complete the emissions estimate, the emission factors calculated by the MOBILE model must then be

multiplied by the level of vehicle activity, i.e. vehicle miles travelled (VMT). The level of vehicle travel activity is developed from travel demand models run by the Texas Department of Transportation or the local MPO. The travel demand models have been validated against actual ground counts of traffic passing over counters placed in various locations throughout each county. Estimates of VMT have been provided for some areas based on outputs of the federal Highway Performance Monitoring System, which is a model built around vehicle count data from a number of specially located traffic counters.

(4) Non-Road Mobile Sources

This source category includes military, commercial and general aircraft, marine vessels, recreational boats, railroad locomotives, and a very broad category that includes everything from the engines on construction equipment and tractors to lawn mowers and chainsaws. Calculation methods for emissions from non-road engine sources vary considerably because of the differences in usage patterns, but in general are based on manufacturer supplied information about engine horsepower, load factor, emission factors, usage, and equipment sales and distribution. Emissions estimates for all sources in the non-road category except aircraft were developed by a contractor to EPA's Office of Mobile Sources. Information regarding engine population and type was assembled by the contractor from national sales data, and

patterns of equipment usage were derived by the contractor from several regional surveys. Aircraft emissions were estimated with landing and takeoff data for airports in each area multiplied by EPA developed emission factors for aircraft operations.

(5) Biogenics

Biogenic sources are essentially all types of plant life in the biosphere; forests, crops, lawn grass, and other vegetation. Plants are sources of VOC such as isoprene, monoterpene, and alpha-pinene. Tools for estimating emissions include satellite imaging for mapping of vegetative types and computer modeling of emissions estimates based on emission factors by plant species. Emissions from biogenic sources are subtracted from the inventory prior to determining any required reductions for the 15% demonstration plan. However, the biogenic emissions are important in determining the overall emissions profile of an area and are included in the modeling of strategies for reaching attainment of the ozone air quality standard.

(6) Determination of Target Level

(a) Base Year Inventory

The Final 1990 Base Year Emissions Inventory is the most extensive, comprehensive inventory undertaken to date in terms of

numbers of categories calculated, accounts reported, and inventory questionnaires evaluated. There were approximately 1,200 point source accounts reported and about 80 area source categories calculated. The categories that make up the final inventory are: point sources, area sources, biogenics, and mobile sources (on-road and non-road). The emissions numbers from these categories were collected, or calculated, for the counties in all four nonattainment areas. Table 4 is an example of a hypothetical Final Base Year Inventory.

TABLE 4

Example: Final Base Year Inventory

SOURCE CATEGORIES	EMISSIONS IN POUNDS PER DAY (lb/day)
Point Sources	1,000
Area Sources	2,500
Mobile Sources	3,000
Biogenic Sources	350
Total	6,850

(b) Rule Effectiveness and Rule
Penetration Adjustments

Rule effectiveness (RE) and rule penetration are adjustments/reductions that occur to the raw emissions totals before they are ever compiled into the Final Base Year Inventory. RE is applied

to all point source categories and may be applied (along with rule penetration) to applicable, regulated area source categories.

RE is an estimate of the ability of a rule to control the source to which it is applied. It is based on process type, process control reliability, and the ability of the regulating authority to measure and enforce the rule. EPA requires that an adjustment be made to the actual emissions measurements from each point and area source to account for RE. Without documentation to indicate determination of RE, EPA requires a default RE of 80%. The former TACB determined a different value for several major source categories based on research into the control technologies and methodologies applied in the particular industrial setting. (The former TACB's rule effectiveness study, TACB RULE EFFECTIVENESS DETERMINATION, is included in Appendix B). An example of an emissions reduction calculation using RE is shown below:

Uncontrolled emissions	=	35 tons per day (TPD)
Estimated control efficiency	=	90%
RE	=	90%
Emissions reduction	=	35 [1 - (.90) (.90)]
	=	35 [1 - .81]
	=	28.35 TPD

The application of RE results in an emission reduction of 28.35 TPD or 81 percent.

Rule penetration (RP) is the extent to which a regulation may cover emissions from an area source category. If an area source rule has an exemption level, the RP is the percent of the total emissions in the category that are subject to the rule. RP must be estimated for all area source rules. Rule penetration is estimated in the following manner:

$$\text{Rule Penetration} = \frac{\text{(Uncontrolled emissions covered by the regulation)}}{\text{(Total uncontrolled emissions)}} \times 100\%$$

An example of the calculation is:

Uncontrolled emissions	=	50 TPD
Control efficiency	=	95%
RP	=	75%
RE	=	80%
Emissions reduction	=	50 x [1 - (.75) (.95) (.80)]
	=	50 [1 - (.57)]
	=	21.5 TPD

The application of RP with RE results in an emission reduction of 21.5 TPD or 57 percent.

(c) Rate-Of-Progress Base Year Inventory

The ROP Base Year Inventory is derived from the Final 1990 Base Year EI by subtraction of the biogenics emissions numbers from the inventory totals. In addition, the ROP Base Year EI is

confined to reporting on emissions strictly from the nonattainment counties. Table 5 continues the example.

TABLE 5

Example: ROP Base Year Inventory

SOURCE CATEGORIES	EMISSIONS IN LB/DAY
Point Sources	1,000
Area Sources	2,500
Mobile Sources	3,000
Total	6,500

(d) Adjusted Base Year Inventory

Adjustments are then made to the ROP Base Year EI reducing the mobile source emissions totals by those emissions that would occur by 1996 as a result of the Federal Motor Vehicle Control Programs (FMVCP) promulgated prior to the FCAA Amendments. These are reductions that would occur as a consequence of fleet turnover between 1990 and 1996 regardless of the FCAA Amendments. Another adjustment made to the mobile source total involves a reduction that has the effect of excluding any emissions reductions that would occur between 1990 and 1996 as a result of Reid vapor pressure (RVP) regulations promulgated by November 15, 1990 or required under §211(h) of the FCAA Amendments. The resulting inventory, after these reductions, is called the Adjusted Base

Year Inventory. An example Adjusted Base Year Inventory is found in Table 6.

TABLE 6

Example: Adjusted Base Year Inventory

SOURCE CATEGORIES	EMISSIONS IN LB/DAY
Point Sources	1,000
Area Sources	2,500
Mobile Sources (minus FMVCP & RVP of 500 lb/day)	2,500
Total	6,000

(e) 15% Reduction Required by 1996

In order to calculate the total 15% reduction in emissions mandated by the FCAA Amendments by 1996, the Adjusted Base Year Inventory is multiplied by 15%.

Example: $6,000 \text{ lb/day} \times .15 = 900 \text{ lb/day}$

(f) Total Expected Reductions by 1996

The next step in the calculation process is to determine the total of expected reductions by 1996. These reductions include two reductions already discussed: the 15% reduction and the FMVCP and RVP adjustments. However, there are two additional reductions that need to be discussed: Reasonably Available

Control Technology (RACT) rule corrections and I/M program corrections.

The RACT rule corrections (or RACT Fix-ups) are reductions in emissions resulting from regulations that require capture systems, correction of a limit that was wrong, or promulgation of a rule that has the effect of reducing emissions, but a commitment had been made prior to the FCAA Amendments to develop such a rule as part of a 1977 or Post-1982 SIP. A state cannot take "credit" again for finally carrying through with its earlier commitment.

The I/M program corrections are made necessary when an area's program does not meet the standards of its current SIP or when an area's I/M program does not meet the reductions achieved by EPA's minimum requirements. No I/M correction factor is required for any area implementing an acceptable exhaust gas (tail pipe) testing program. The antitampering only program in the Houston area was not acceptable and required a correction as part of subsequent SIP revisions.

In a letter to the former TACB dated January 23, 1991, EPA stated that the I/M program for El Paso met all requirements. This clearly indicated that no correction was needed. While this letter also stated that the I/M program in the Dallas/Fort Worth area did not fully satisfy the requirements in place at the time, only minor improvements in data reporting and collection were

needed. Discussions with EPA indicated that, since the latest testing technology (BAR90 analyzers) was being used in the Dallas/Fort Worth program, improvements to these administrative aspects of the program could be made without credit penalties. Coordination with EPA has been ongoing since that time to accomplish these improvements. Furthermore, EPA indicated that formal submissions of SIP revisions would not be necessary since development of the overall restructuring of the I/M program in response to new FCAA requirements was proceeding. Processing of additional SIP revisions, therefore, was unnecessary and unproductive.

The total of the required 15% reduction, FMVCP and RVP reductions, RACT rule correction reductions, and I/M program corrections equal the total expected reductions by 1996. Table 7 shows an example calculation of reductions by 1996.

TABLE 7

Example: Calculation of Total Reductions by 1996

TYPE OF REDUCTION	REDUCTION AMOUNT IN LB/DAY
Required 15%	900
Expected Reductions from RVP & FMVCP (1990-1996)	500
Corrections to RACT Rules	300
Corrections to I/M Programs	200
Total	1,900

(g) Setting the Target Level of
Emissions for 1996

The emissions target level is arrived at by subtracting the total reductions shown above from the 1990 ROP Base Year Inventory (discussed previously in subsection (c) of this section). This will be the emission level in 1996 as a result of the reductions and growth which will occur by the end of 1996. Continuing the example:

$$6,500 \text{ lb/day} - 1,900 \text{ lb/day} = 4,600 \text{ lb/day}$$

(h) Projecting the Inventory to 1996

The next step in this process is to project the emissions in 1996. The estimated emission total for 1996 is arrived at by applying growth factors to the total emissions in each category in the 1990 ROP Base Year Inventory. The growth factors applied to point source, area source, and most non-road categories are based on Bureau of Economic Analysis and Wharton Econometrics forecasts of growth over the period in product output, value added, earnings, and employment (among other indicators). The factors themselves are derived from software packages supplied by EPA called Bureau of Economic Analysis Projection Factor and Economic Growth Analysis System. However, the non-road engine category is projected based on growth in area population and

on-road mobile source emissions are projected based on use of travel demand models.

For simplicity's sake, it will be assumed that the growth factor for all categories of emissions is 1.17 over the 1990 to 1996 period:

ROP Base Year Inventory = 6,500 lb/day

$$6,500 \times 1.17 = 7,605 \text{ lb/day}$$

(i) Determination of Required Reductions

The last step in the process of arriving at the bottom line or final target level of required reductions needed by 1996 to achieve a 15% reduction is to subtract the Target Level of emissions previously determined in (g) from the Estimated, or Projected Emissions determined in (h).

Estimated 1996 Emissions = 7,605 lb/day
(with growth and no reductions)

Target 1996 Level = 4,600 lb/day
(with growth and reductions)

Reduction Target = 7,605 - 4,600
= 3,005 lb/day

(7) Inventory Summaries

The 1990 ROP Base Year Inventory for each of the four ozone nonattainment areas is represented in Figure 1. The progression from the 1990 ROP Base Year Inventory to the required reduction target for each of the nonattainment areas is shown in Tables 8, 9, 10, and 11.

b) Factors Affecting Magnitude of VOC Emissions

(1) Changes in Stationary and Area Source Emissions Regulations

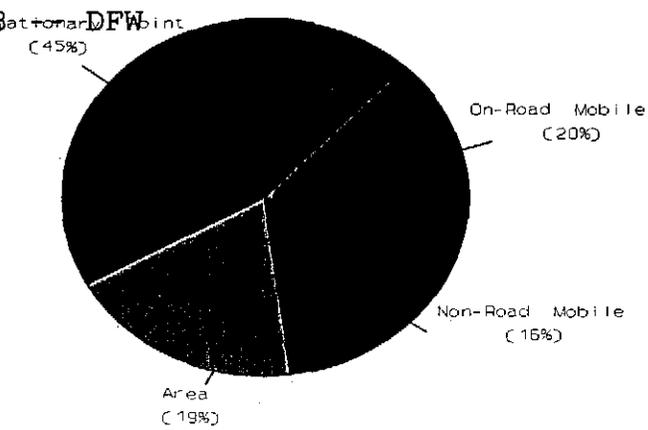
(a) Existing VOC Control Requirements

(i) RACT Fix-Ups

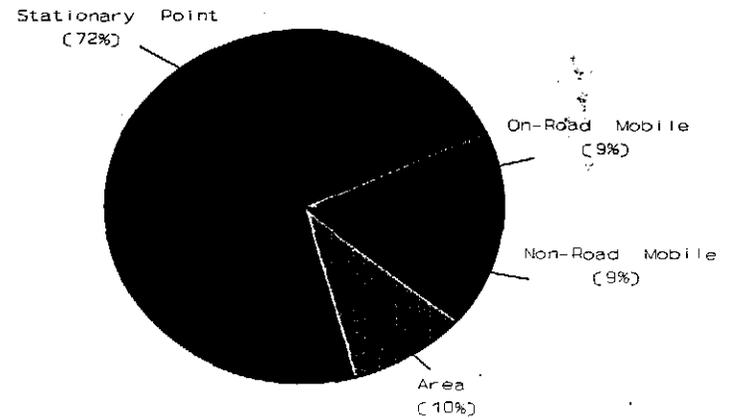
Section 182(A)(2)(a) of the 1990 FCAA Amendments requires states to adopt VOC RACT rule corrections or "fix-ups" to deficient rules by May 15, 1991. In the notice at 44 FR 53761 (September 17, 1979), EPA defined RACT as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." A deficiency is any rule or portion of a rule that is less stringent

Houston - Galveston

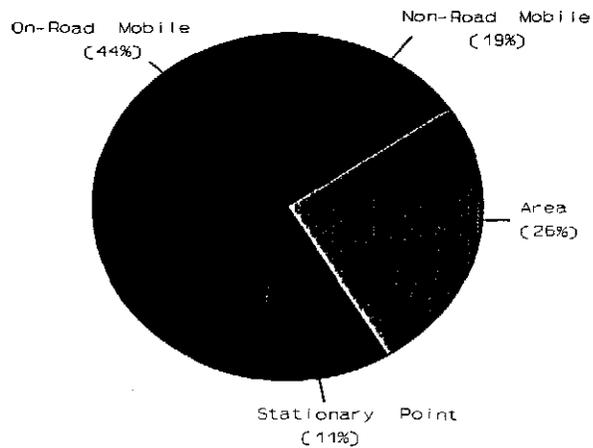
Table 8



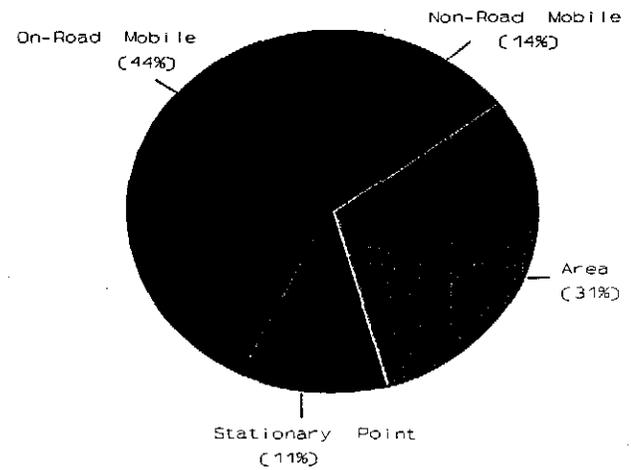
Beaumont - Port Arthur



Dallas - Fort Worth



El Paso



1990 Nonattainment Area VOC Emissions by Major Source Category

TABLE 8
 Final 1996 ROP Required VOC Emissions Reductions Calculations
 Dallas-Fort Worth Ozone Nonattainment Area
 Ozone Season VOC Tons Per Day
 13 May 1994

Step	Emissions Basis	Stationary		Mobile		Total
		Point	Area	On-road	Non-road	
1	1990 ROP Nonattainment Area Base Year EI	66.64	174.25	306.60	97.44	644.93
2	1990 Adjusted Base Year EI	66.64	174.25	204.35	97.44	542.68
3	RVP and FMVCP Reductions [On-road mobile:steps(1-2)]			102.25		
4	15% of Adjusted Base Year EI (0.15*step 2)					81.40
5	RACT Fix-Up and I/M Corrections Reductions	0.99	0.00	0.00		0.99
6	1990 to 1996 Noncreditable Reductions Without Growth [steps(3+5)]					103.24
7	Total ROP Required Reductions Without Growth [steps(3+4+5)]					184.64
8	1996 Target Level Emissions [steps(1-7)]					460.29
9	1996 Emissions Forecast (Growth and Pre-90 Controls)	72.10	184.79	241.14	108.19	606.22
10	Total ROP Required Reductions with Growth [steps(9-8)]					145.93

37

Base year on-road mobile emissions calculated with MOBILE5 for an ozone season weekday

Adjusted base year on road mobile emissions and 1996 forecast on-road mobile emissions calculated with MOBILE5A for an ozone season weekday

All on-road MOBILE5A forecasts are interpolated to November 15, 1996

TABLE 9
 Final 1996 ROP Required VOC Emissions Reductions Calculations
 El Paso Ozone Nonattainment Area
 Ozone Season VOC Tons Per Day
 April 12, 1994

Step	Emissions Basis	Stationary		Mobile			Total
		Point	Area	On-road	Int'l Bridges	Non-road	
1	1990 ROP Nonattainment Area Base Year EI	9.47	27.43	37.60	1.40	11.34	87.24
2	1990 Adjusted Base Year EI	9.47	27.43	24.89	0.84	11.34	73.97
3	RVP and FMVCP Reductions [steps(1-2)]			12.71	0.56		13.27
4	15% of Adjusted Base Year EI (0.15*step 2)						11.10
5	RACT Fix-Up and I/M Corrections Reductions	0.04	1.53	0.00	0.00		1.57
6	Noncreditable Reductions w/o Growth [steps(3+5)]						14.84
7	Total ROP Required Reductions w/o Growth [steps(3+4+5)]						25.94
8	1996 Target Level Emissions [steps(1-7)]						61.30
9	1996 Emissions Forecast (Growth and Pre-90 Controls)	9.34	29.58	30.17	1.01	12.58	82.68
10	Total ROP Required Reductions with Growth [steps(9-8)]						21.38

38

Base year on-road mobile emissions calculated with MOBILE5 for an ozone season weekday

Adjusted base year on road mobile emissions and 1996 forecast on-road mobile emissions calculated with MOBILE5A for an ozone season weekday

All on-road MOBILE5A forecasts are interpolated to November 15, 1996

Source: TNRCC Emissions Inventory Section

TABLE 10
 Final 1996 ROP Required VOC Emissions Reductions Calculations
 Beaumont-Port Arthur Ozone Nonattainment Area
 Ozone Season VOC Tons Per Day
 13 May 1994

Step	Emissions Basis	Stationary		Mobile		Total
		Point	Area	On-road	Non-road	
1	1990 ROP Nonattainment Area Base Year EI	244.37	34.18	31.61	32.47	342.63
2	1990 Adjusted Base Year EI	244.37	34.18	20.14	32.47	331.16
3	RVP and FMVCP Reductions [On-road mobile:steps(1-2)]			11.47		
4	15% of Adjusted Base Year EI (0.15*step 2)					49.67
5	RACT Fix-Up and I/M Corrections Reductions	2.38	1.90	0.00		4.28
6	1990 to 1996 Noncreditable Reductions Without Growth [steps(3+5)]					15.75
7	Total ROP Required Reductions Without Growth [steps(3+4+5)]					65.42
8	1996 Target Level Emissions [steps(1-7)]					277.21
9	1996 Emissions Forecast (Growth and Pre-90 Controls)	235.00	34.37	22.99	32.53	324.89
10	Total ROP Required Reductions with Growth [steps(9-8)]					47.68

39-A

Base year on-road mobile emissions calculated with MOBILE5 for an ozone season weekday

Adjusted base year on road mobile emissions and 1996 forecast on-road mobile emissions calculated with MOBILE5A for an ozone season weekday

All on-road MOBILE5A forecasts are interpolated to November 15, 1996

TABLE 11
Final 1996 ROP Required VOC Emissions Reductions Calculations
Houston-Galveston Ozone Nonattainment Area
Ozone Season VOC Tons Per Day
13 May 1994

Step	Emissions Basis	Stationary		Mobile		Total
		Point	Area	On-road	Non-road	
1	1990 ROP Nonattainment Area Base Year EI	484.45	242.96	251.72	200.14	1179.27
2	1990 Adjusted Base Year EI	484.45	242.96	163.39	200.14	1090.94
3	RVP and FMVCP Reductions [On-road mobile:steps(1-2)]			88.33		
4	15% of Adjusted Base Year EI (0.15*step 2)					163.64
5	RACT Fix-Up and I/M Corrections Reductions	3.50	2.04	6.29		11.83
6	1990 to 1996 Noncreditable Reductions Without Growth [steps(3+5)]					100.16
7	Total ROP Required Reductions Without Growth [steps(3+4+5)]					263.80
8	1996 Target Level Emissions [steps(1-7)]					915.47
9	1996 Emissions Forecast (Growth and Pre-90 Controls)	482.98	258.57	190.37	215.79	1147.71
10	Total ROP Required Reductions with Growth [steps(9-8)]					232.24

Base year on-road mobile emissions calculated with MOBILE5 for an ozone season weekday

Adjusted base year on road mobile emissions and 1996 forecast on-road mobile emissions calculated with MOBILE5A for an ozone season weekday

All on-road MOBILE5A forecasts are interpolated to November 15, 1996

than EPA interpretation of RACT in pre-1990 FCAA guidance. The FCAA Amendments require that emission reductions resulting from RACT fix-ups may not be counted towards the mandated 15% VOC reduction. The calculation of RACT fix-ups for point and area sources is presented in Appendix C.

(ii) RACT Catch-ups

Areas that were treated as rural nonattainment areas prior to the 1990 FCAA Amendments (including Orange, Jefferson, Galveston, and Brazoria Counties) may treat Group III Control Techniques Guidelines (CTG) as part of the RACT "catch-ups" for which credit may be taken as part of the required 15% VOC reduction by 1996. RACT catch-ups include the extension of existing rules to the recently designated nonattainment counties including Collin and Denton in the Dallas/Fort Worth area, Fort Bend, Liberty, Montgomery, Waller, and Chambers in the Houston/Galveston area, and Hardin in the Beaumont/Port Arthur area. All emission reductions associated with RACT catch-ups are creditable towards the mandated 15% VOC reduction. The calculation of emission reductions associated with RACT catch-ups is described in Appendix D.

(iii) Leveling the Playing Field

In May, 1992, a revision to 30 TAC Chapter 115, regarding Control of Air Pollution from Volatile Organic Compounds, was adopted.

This revision incorporated a federal program known as leveling the playing field. This program required that the most stringent controls currently in Chapter 115 on stationary source VOC existing in one nonattainment area be extended to all other nonattainment areas. This includes the extension of the lowest exemption levels. This was done in an attempt to make all nonattainment areas "play by the same rules." The improvement is creditable toward the 15% ROP requirement and has been included in the catalog calculations in Appendix D.

(b) Additional CTG, Federal
Rules, and Other Federal and State
Programs

According to §108(b)(1) of the FCAA Amendments of 1990, the EPA Administrator shall issue to the states and appropriate air pollution control agencies information on air pollution control. Sections 182(b)(1)(C) and (D) of the FCAA specify in general terms which emissions reductions are creditable toward the ROP reduction requirements and which are not. Section 182(b)(1)(D) does not specifically limit the creditability of emissions reductions associated with the programs discussed in this section toward the ROP requirements; therefore, emissions reductions associated with the programs listed below are generally creditable. However, some additional limitations do exist to the extent that emissions reductions associated with the programs

listed below must be quantifiable, real, enforceable, replicable, accountable, and occur by November 15, 1996. The federal programs listed below are generally creditable, provided they meet these limitations. Additionally, some state programs may be creditable provided they meet these limitations. The most important of these programs are discussed in greater detail later in this section.

- Control Technique Guidelines (CTGs)
- Benzene National Emissions Standards for Hazardous Air Pollutants (NESHAPS)
- Treatment, Storage, and Disposal Facilities (TSDFs)
- Hazardous Air Pollutant (HAP) Standards
- New Source Performance Standards (NSPS)
- Controls required for mobile sources

The 1990 FCAA Amendments significantly changed the permitting process for new sources or modifications of existing sources. The most important changes are with respect to the application of rules requiring emissions offsets in nonattainment areas. The definition of "major source" has also changed for certain nonattainment areas. In Texas, the major source definition has been reduced from 100 TPY to 50 TPY in the El Paso and Beaumont/Port Arthur areas and to 25 TPY in the Houston/Galveston area. An additional impact of lowering the definition of major source in the nonattainment areas is the lower trigger for implementing the

Lowest Achievable Emissions Rate (LAER) for new major sources or major modifications in accordance with the state construction permit rules in §116.150. Although the new major source definition and offset requirements may result in lower emissions, the reductions cannot be quantified at this time and have not been included as estimated reductions. Any reductions that do occur will be creditable towards the 15% reduction requirement as determined by the 1996 inventory.

The offset requirement is managed by an "emissions banking" regulation. This allows industries to bank emissions they have made voluntarily (beyond those required by their TNRCC permit) if those reductions can be verified. New or expanding industries which would not otherwise have been permitted to operate can take advantage of these banked emissions. Nonattainment areas can, therefore, still attract new or expanding industry while obtaining subsequent emissions decreases through the required offsets.

Under the banking system, industries which are capable of demonstrating a verifiable voluntary reduction in emissions may sell these banked emissions to new or expanding industries. The purchasing industry must prove a greater than one-to-one offset ratio. These offset ratios vary between nonattainment areas and are summarized in Table 12.

TABLE 12

Banking Offset Ratios in Texas Nonattainment Areas

NONATTAINMENT AREA	CLASSIFICATION	OFFSET RATIO	% NET REDUCTION
Dallas/Fort Worth	Moderate	1.15 to 1	15%
Beaumont/Port Arthur El Paso	Serious	1.20 to 1	20%
Houston/Galveston	Severe	1.30 to 1	30%

The FCAA required EPA to publish federal CTGs to control VOC emissions from several sources, including the following: volatile organic liquid storage, wood furniture, plastic parts, synthetic organic chemical manufacturing industry (SOCMI) batch processes, industrial clean-up solvents, aerospace, marine coatings, offset lithography, SOCMI distillation and reactors, petroleum and industrial wastewater, and automobile refinishing. EPA had only published final CTG documents for SOCMI reactor and distillation processes in time for them to be included in the 1993 SIP revisions, and has recently notified the states that they will not be providing CTGs for the other sources in the foreseeable future. Instead, EPA is to issue "Alternative Control Techniques" (ACTs) for these sources. TNRCC has developed rules for several of these categories based on draft CTGs and ACTs, including offset lithography, SOCMI distribution and reactors, petroleum and industrial wastewater, and automobile refinishing. Sections VI.B.7.a.4)b)(1)(c)(ii) and (iii) discuss these rules.

The 1990 FCAA Amendments require a 15% reduction in emissions of VOC from the 1990 base year emissions inventory by November 15, 1996. Any reductions must be real, permanent, and enforceable. In January 1993, EPA promulgated 40 CFR 61 Subpart FF, NESHAPS for Benzene Waste Operations. The reductions associated with this will be permanent and enforceable and will occur prior to 1996. Therefore, the TNRCC is including reductions associated with the implementation of the Benzene NESHAPS for Waste Operations toward its 15% ROP reduction in the Beaumont/Port Arthur nonattainment areas. The staff has worked closely with the Texas Chemical Council and Texas Mid-Continent Oil and Gas Association to develop an understanding of the minimum requirements which individual companies would need to submit in order for credit to be received. (See Appendix G for reduction documentation.)

In a May 16, 1993 memorandum from G. T. Helms, Chief of the Ozone/Carbon Monoxide Programs Branch at RTP to all EPA Regions, it was stated that states can take credit for TSDf Phase II requirements at 93% from the 1990 baseline.

The TSDf rule is a federal rule. The EI contains two categories which are regulated by that rule. Category 119: TSDf's - Surface Impoundments and Category 120: TSDf's - Transfer, Storage, and Handling. The breakdown of emissions are as follows:

Dallas/Fort Worth: Category 119 = 0
 Category 120 = 0

El Paso: Category 119 = 0
 Category 120 = 0

Beaumont/Port Arthur: Category 119 = 0.04 ton per ozone day (TPOD)
 Category 120 = 0
 Total Reductions = (0.04)(0.93) = 0.037 TPOD

Houston: Category 119 = 0.855 TPOD
 Category 120 = 0.003 TPOD
 Total Reductions = (0.858)(0.93) = 0.798 TPOD

Subchapter B of 30 TAC Chapter 120, concerning Pollution Prevention Requirements; Source Reduction and Waste Minimization, grew out of Senate Bill 1099, and was adopted by the former TACB and the former TWC jointly in December 1991. This Waste Reduction Policy Act required certain industries to submit a plan detailing how they intended to reduce pollution. Since this act was voluntary and not enforceable, it is considered non-creditable in the ROP SIP. However, the TNRCC, working with industry and EPA, has proposed that these reductions could be creditable under certain circumstances. If an industry wants credit for reductions achieved as part of the Waste Reduction Policy Act, they must quantify and justify the reductions made. These reductions may not be double-counted as part of an NSR, banking, or other offset program. They must be reductions from the 1990 EI. In effect, they must be reductions "out of the air." Currently, no

industries have submitted justification for any reductions made under this program, and no reductions credits are included in the ROP SIP.

Nonattainment areas may also take credit for permanent shutdowns of stationary sources within their airshed. These shutdowns must be permanent. The credits may not be double-counted as part of NSR, banking, or any other offset program. The shutdowns must occur between 1990 and 1996. Within this framework, an area may take credit for the entire emissions from the closed facility or operations. Support documentation for shutdown credits is contained in Appendix N.

(c) Proposed New VOC Control Measures

(i) New or Modified Point

Source Controls

This section will discuss control measures implemented to control VOC emissions from point sources. Later sections will discuss estimated reductions expected from these rules for each specific nonattainment area. The following rules deal mainly with point sources. The Control Measure Catalog (CMC), as discussed in Appendix E, ranks the various control measures based on a variety of criteria. This ranking will be especially useful in determining rules to be used as contingency measures.

Values for rule effectiveness (RE), rule penetration (RP), and control efficiency (CE) can be found for the rules in the discussion of each nonattainment area.

SOCMI Reactor Processes and Distillation Operations (§§115.121-115.129).

This rule applies to all nonattainment areas, but reductions are quantified for the Houston/Galveston nonattainment area only.

These rules control VOC by expanding the vent gas rule to restrict VOC emissions from SOCMI reactor processes and distillation units. New control requirements specify that emission control equipment for SOCMI reactor processes and SOCMI distillation operations must have a destruction efficiency of at least 98% or control the vent gas stream to a VOC emission rate of no more than 20 parts per million by volume (ppmv). Also, clarifications have been added to the existing control requirements for air oxidation SOCMI processes, liquid phase polypropylene manufacturing processes, liquid phase slurry high-density polyethylene manufacturing processes, and continuous polystyrene manufacturing processes.

Industrial Wastewater (§§115.141-115.149).

This rule applies to El Paso, Dallas/Fort Worth, and Houston/Galveston.

These rules permit the state to apply new federally-mandated guidelines for industrial wastewater earlier than required and take credit for the VOC emissions reduced thereby. Industrial wastewater operations would be required to cover wastewater treatment areas and route the vapors through a control device.

Marine and Other Vessel Loading (§§115.211-115.219).

Loading for non-marine transportation vessels applies to all areas. Marine vessel loading is applicable only to Houston/Galveston.

This rule requires fugitive emissions monitoring at gasoline terminals to detect and repair leaks from loading racks and transfer equipment. Vacuum-assisted vapor collection systems and automatic shutdown of the loading system during vapor control device malfunctions are also required.

Marine vessel loading rules extend rules similar to those for gasoline terminal loading operations to include those involving loading of marine vessels.

Fugitive Emissions--Natural Gas, Refinery, and SOCOMI (§§115.352-115.359).

This rule applies to all four nonattainment areas.

These rules apply a more stringent fugitive monitoring program to all natural gas, refinery, and SOCOMI facilities.

Acetone Replacement (§§115.412-115.419).

This rule applies to El Paso, Dallas/Fort Worth, and Houston/Galveston.

These rules require that acetone solvents used in the fiber-reinforced plastics (FRP) and cultured (synthetic) marble industries be replaced with low vapor pressure VOC solvents or water-based solvents. The adds a limitation on acetone usage at cultured marble and FRP operations and specify acceptable acetone substitutes. Testing and recordkeeping are also required.

Offset Lithography Printing (§§115.441-115.449).

This rule applies to El Paso, Houston/Galveston, and Dallas/Fort Worth.

These rules require process changes for offset lithographic printing operations such as those used in the printing of newspapers and advertisements. The rules specify control requirements for several types of offset printing. In some cases, add-on controls are required.

Marine and Other Vessel Cleaning (§§115.541-115.549).

This rule applies to all four nonattainment areas.

Normally, VOC emissions from cleaning or repair of storage tanks, tank trucks, rail cars, barges, and ships are vented directly to the air without control. These rules control the handling of those VOCs.

Benzene National Emission Standards for Hazardous Air Pollutants
(NESHAPS) Reductions.

VOC emission reductions associated with benzene NESHAPS apply to the Houston/Galveston nonattainment area and are described in Appendix G.

Rule Effectiveness Improvements.

RE improvements are applicable to all nonattainment areas.

Credits can be obtained with real emission reductions resulting from the specific implementation program improvements through better or clearer rules, more frequent inspections, more inspectors, improved recordkeeping requirements, more stringent penalties for non-compliance, or more strict control requirements. The RE National Protocol provides guidance to the states and local agencies for conducting rule effectiveness studies that conform to standards set by the Stationary Source Compliance Division (SSCD). SSCD protocol studies, as they are called, are a detailed source-by-source checklist to determine RE and were initiated in 1988 as a compliance tool. The TNRCC has developed its own methodology pursuant to the Addendum of EPA guidance document Guidelines for Estimating and Applying Rule Effectiveness for Ozone/CO State Implementation Plan Base Year

Inventories. This methodology has been approved for use by EPA, but must be confirmed in 1996 by a commitment to perform an SSCD study to verify that the reductions taken are accurate.

Rather than perform a costly and time-consuming SSCD protocol study, the TNRCC is committing to use the following approach, which it believes more accurately determines the actual RE of each control measure.

1. There will be significant increases in regional office compliance and enforcement staff. These additional resources will enable inspectors to precisely determine in-use control efficiency as part of each annual inspection. This determination will identify three elements: the Standard Industrial Classification (SIC) code, the process unit, and the control equipment. This determination will be based on data from continuous emissions monitors, parametric emission monitoring programs, stack sampling, records of equipment performance vendor data, and other applicable information. The results of this determination will be reported in conjunction with the annual EI submission.
2. The TNRCC upset/maintenance rule will be revised to require more detailed recordkeeping. Information on the exact amount of the emissions released in excess of the in-use control efficiency will be required.

These two pieces of information taken together will allow the staff to determine an exact actual annual emission rate for each emission point. The results of an SSCD protocol study, on the other hand, provide only an industry average that may or may not accurately reflect the conditions at any given site or for a specific piece of control equipment. The sources for further study will be prioritized based on the amount of reductions obtainable--those industries with the largest reductions will receive top priority. Tables 13 and 14 are lists of prioritized source categories with creditable RE improvements.

(ii) New or Modified Area Source
Controls

The following rules apply mainly to area sources of VOC emissions.

Commercial Bakeries (§§115.121-115.129).

This rule applies to El Paso, Dallas/Fort Worth, and Houston/Galveston.

This rule requires VOC emission reductions of at least 30% overall from 1990 base year emissions for bakeries if the total emissions exceed 25 TPY.

TABLE 13

Reductions Due to Rule Effectiveness Improvements--Area Sources

CATEGORY	DFW	ELP	BPA	HOU	TOTAL
Tank Truck Unloading	1.036	0.138	0.421	1.155	2.750
Surface Cleaning	0.408	0.000	0.000	0.554	0.962
Sheet Strip Coil	0.023	0.000	0.000	0.179	0.202
Architectural Coatings	0.184	0.000	0.000	0.000	0.184
Metal Containers	0.083	0.000	0.000	0.099	0.182
Machinery/Equipment	0.049	0.010	0.000	0.049	0.108
Other Trans Equipment	0.066	0.000	0.000	0.000	0.066
Factory Finished Wood	0.020	0.005	0.000	0.037	0.062
Auto New-Misc Metal	0.058	0.000	0.000	0.000	0.058
Tank Trucks in Transit	0.015	0.002	0.008	0.017	0.042
Cutback Asphalt	0.022	0.000	0.006	0.011	0.039
Electrical Insulation	0.012	0.002	0.000	0.000	0.014
Appliances	0.013	0.000	0.000	0.000	0.013
TOTAL	1.989	0.157	0.435	2.101	4.682

TABLE 14

Reductions Due to Rule Effectiveness Improvements--Point Sources

CATEGORY	DFW	ELP	BPA	HOU	TOTAL
Gasoline Terminals	1.301	0.293	2.585	0.294	4.473
Roof Tanks-Ext Float	0.018	0.063	1.071	1.410	2.562
Resins-Polyethylene	0.000	0.000	0.980	1.258	2.238
Gasoline Plants	0.151	0.043	0.344	0.590	1.128
Pet Ref: Vac Prod	0.000	0.032	0.195	0.852	1.079
Storage Tanks-Fixed	0.045	0.001	0.109	0.814	0.969
Air Oxidation-SOCMI	0.000	0.000	0.236	0.342	0.578
Graphic Arts	0.555	0.000	0.000	0.018	0.573
Resins-Polypropylene	0.000	0.000	0.000	0.553	0.553
Auto New-Misc Metal	0.241	0.000	0.000	0.006	0.247
Resins-Polystyrene	0.141	0.000	0.000	0.104	0.245
Surf Coat Misc Met	0.111	0.014	0.022	0.058	0.205
Surface Cleaning	0.077	0.000	0.001	0.031	0.109
Cans	0.032	0.000	0.000	0.071	0.103
Metal Coils	0.028	0.000	0.000	0.016	0.044
Paper Products	0.033	0.000	0.000	0.000	0.033
Factory Finished Wood	0.026	0.000	0.000	0.004	0.030
Metal Furniture	0.013	0.000	0.000	0.000	0.013
Appliances	0.004	0.000	0.000	0.007	0.011
Fabrics	0.004	0.005	0.000	0.000	0.009
TOTAL	2.780	0.451	5.543	6.428	15.202

Municipal Landfills (§§115.151-115.159).

This rule applies to Dallas/Fort Worth, El Paso, and Houston/Galveston.

EPA has proposed NSPS rules which use a gas extraction system to reduce VOC emissions from sanitary landfills. The state is permitted to implement these rules early and claim credit for VOC reductions.

Auto Body Shops (§§115.421-115.429).

This rule applies to El Paso, Dallas/Fort Worth, and Houston/Galveston.

This rule adds VOC emission limitations for coatings and solvents used in automobile refinishing. The applicability of automobile refinishing control requirements for Dallas and Tarrant Counties has been expanded to include Brazoria, Chambers, Collin, Denton, El Paso, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties. The changes also specify the procedures that automobile refinishing operations must use to minimize VOC emissions during equipment clean-up and require automobile refinishing operations to utilize coating application equipment with a transfer efficiency of at least 65%.

EPA is developing a national auto body shop rule and has stated that the national rule will reduce VOC emissions from the 1990 baseline by 40% by 1996. The TNRCC's rule will be essentially equivalent to the national auto body shop coating rule, except that the TNRCC's rule includes transfer efficiency and clean-up requirements.

Architectural Coatings (§§115.421-115.429).

This rule applies in El Paso, Dallas/Fort Worth, and Houston/Galveston.

This rule specifies VOC emission limitations for approximately 30 categories of architectural coatings and will be essentially equivalent to the national architectural coating rule which EPA is currently developing. In a memo dated September 10, 1993, EPA stated that the national rule will reduce VOC emissions from the 1990 baseline by 25% by 1996. The TNRCC may decide to repeal this rule when EPA has adopted the national architectural coating rule.

Dry Cleaning (§§115.521-115.529).

This rule applies to El Paso, Dallas/Fort Worth, and Houston/
Galveston.

These rules add control requirements for dry cleaning operations which use VOC such as naphtha or Stoddard Solvent as the cleaning solvent. Dry cleaners which use perchloroethylene, which EPA is reclassifying as a non-VOC, are not included.

Consumer/Commercial Products (§§115.611-115.619).

This rule applies to all nonattainment areas. This rule is applicable statewide.

These rules control the amount of VOC used in a variety of products such as air fresheners, bathroom and tile cleaners, automotive cleaners, polishes, and waxes, floor polishes and waxes, general purpose cleaning supplies, toiletries, and laundry detergents. This rule will be statewide upon implementation to maximize the amount of creditable reductions from rule effectiveness.

(d) New or Modified Mobile or Non-Road
Mobile Source Controls

Small Utility Engines (§§115.621-115.629).

This rule applies to all nonattainment areas and will be applied statewide.

The rule establishes emission limits for small gasoline powered and diesel utility engines with power ratings of 25 horsepower and less. These engines are generally used for lawn and garden equipment, timbering operations, generation of electricity, and pumps. The new rule also establishes criteria for Executive Director approval of engine classes to be sold in Texas. The primary basis of approval will be proof that an engine has been certified by California Air Resources Board (CARB) as meeting emission levels and warranty requirements. Noncertified engines can be sold if a certified engine is unavailable and the exclusive application of the engine is to power emergency equipment as used by police and fire departments and other emergency applications.

The emission reduction credits claimed for this rule are based on reduction estimates by the CARB for individual utility engines. CARB is claiming about 40% emissions reduction as a result of

implementing the first tier of emission standards in 1995. CARB also projected a 40% annual inventory turnover of utility engines in use. The TNRCC estimates that the inventory turnover would be slower than the CARB projection and, therefore, estimates a 10% VOC reduction from utility engines by 1996. An additional 10% VOC reduction by 1997 is identified as a potential contingency measure.

Gasoline Volatility (Reid Vapor Pressure) Controls (§§115.241-115.249).

Representatives of local government and the Chevron refinery in El Paso approached TNRCC about the possibility of lowering RVP in summer gasoline instead of using reformulated gasoline (RFG) to minimize the cost of refinery modifications resulting in lower cost at the pump for consumers. Chevron submitted results from the EPA complex model for predicting fuel effects. The results show VOC reductions that are substantially equivalent to those from the use of reformulated fuel when RVP is lowered to 7.0 pounds per square inch (psi).

Due to the substantially equivalent VOC reductions obtainable from low-RVP gasoline and the overwhelming support for the low-RVP program by local government and industry, TNRCC will implement a low-RVP gasoline program. RVP gasoline has benefits for

both on-road and non-road mobile sources. Additionally, it will be possible to sell the RVP gasoline in Ciudad Juarez, obtaining more widespread benefits for the air basin.

Current estimates indicate RVP gasoline resulting in a one cent per gallon increase at the pump as opposed to a predicted four to ten cents per gallon increase for reformulated gasoline.

Commercial Airport Rules.

Large commercial airports can be a significant source of VOC and NO_x emissions which are produced by a wide variety of sources. These sources include, but are not limited to, aircraft takeoff and landings, aircraft taxi and queuing activities, aircraft refueling operations, aircraft gate support and servicing operations, aircraft maintenance and painting operations, fuel farm operations, fuel tank fugitives, fire training facility operations, automobile VMT emissions from service and passenger vehicles, evaporative emissions from parked vehicles, and increased congestion from airport vicinity traffic.

The primary difficulty to proposing rules for airport-related emissions is the development of a comprehensive and accurate EI. Airport emissions are typically reported in several categories and are seldom brought together as one airport EI. For example,

aircraft emissions are reported as part of the non-road mobile source emissions using emissions factors based on the landing and takeoff frequency, while the fuel farm emissions are reported as point source emissions by the fuel farm operating contractor. On the other hand, automobile traffic from passengers, vendors, and service vehicles is not reported as part of the airport mobile source emissions, but rather as a part of the nonattainment area-wide mobile source emissions. Therefore, the first step to airport rules will be the development of a consolidated airport emissions inventory.

Once the consolidated inventory is developed, then a strategy of airport-related rules may be developed. Many of the rules which impact airport emissions will not be specifically airport rules, but will show reductions at the airport. For example, a TCM to provide a commuter rail system with a stop at an airport will lower the VMT from passenger automobiles. Another example is the federal aircraft noise control rules to phase-in "Stage 3" aircraft which will provide emissions reductions because the "Stage 3" engines are more fuel efficient in addition to being less noisy. Airport-related rules which may be proposed for contingency measures or the attainment demonstration rule package include airfield improvement projects, centralized power and air conditioning at aircraft gates, cleaner (alternative fuel or electric) airport fleet vehicles, cleaner airport service (shuttle bus, taxi, rental car, etc.) vehicles, fugitive emissions

controls on aircraft fuel storage tanks, refueling controls (aircraft fuel and automobile fuel), controls on aircraft maintenance processes, and faster conversion to "Stage 3" aircraft.

Stage II Vapor Recovery (§§115.241-115.249).

The 1990 FCAA Amendments required states with ozone nonattainment areas to submit a revision to the SIP which included a Stage II vapor recovery program to control gasoline vapors from the refueling of motor vehicles. Gasoline vapors which escape during the refueling process are VOC which contribute to the formation of ozone and also contain benzene and other known carcinogens. Stage II vapor recovery has played a substantial role in emission reduction in California since the early 1970s, and several other states have successfully implemented Stage II programs. EPA has published technical guidance documents to assist states in developing their own Stage II program.

EPA mandates that Stage II requirements apply to all public and private refueling facilities dispensing 10,000 gallons or more of gasoline per month. Independent small business marketers of gasoline whose facilities have a throughput of less than 50,000 gallons per month may request an extended compliance schedule. They will then be required to install Stage II systems when their

storage tanks are replaced or equipped with corrosion protection, but no later than December 22, 1998.

The TNRCC will approve only those vapor recovery systems certified by the CARB. The TNRCC will not approve vapor recovery systems which include remote vapor check valves. Only coaxial hose vapor recovery systems will be approved for use in Texas. All existing dispenser pumps shall be retrofitted with original equipment manufacturer (OEM) parts or CARB-certified non-OEM aftermarket parts.

The TNRCC will provide comprehensive training to all Stage II inspectors through certified trainers and at least one owner-operator from each facility. It will also provide information to regulated facilities stating the general purpose and benefit of the Stage II program, program requirements, enforcement consequences, and other information. The TNRCC will also provide this information to the public.

The TNRCC will provide guidance to facilities regarding record-keeping requirements. All facilities will be required to maintain Stage II vapor recovery records for the purpose of verifying compliance. The TNRCC will review each facility's records to ensure that records of testing results, maintenance, inspections, and training certification are all properly documented and available to the inspector. The TNRCC will also maintain detailed

records to include the information listed above and any inspection and enforcement actions.

Each facility must install underground equipment that meets all Stage II and other related regulations. The TNRCC will verify that each facility complies with these regulations. The TNRCC will perform appropriate inspection activity for each facility. At such time, the TNRCC will verify that all equipment meets configuration requirements and that all equipment is properly labeled with instructions for operation. If a non-clerical violation is detected at any facility, the TNRCC will conduct a mandatory follow-up inspection.

The TNRCC has established a penalty schedule designed to deter noncompliance, as required by EPA. Violations of these regulations may result in administrative penalties of up to \$10,000 per day per violation and civil penalties of up to \$25,000 per day per violation. If a nonclerical violation is detected at any facility, the TNRCC shall conduct a mandatory follow-up investigation. The continued dispensation of fuel will be prohibited and the equipment will be labeled "out of order" by the inspector until such time as the violation is corrected.

When unannounced annual inspections are performed, the proper installation of Stage II vapor recovery has demonstrated an in-use efficiency of approximately 81 percent. (This takes into

consideration the RE and RP exemption levels included in the TNRCC's Stage II rules.) Therefore, these controls are expected to result in significant reductions in VOC emissions from gasoline refueling facilities, as well as reduced public exposure to known human carcinogens such as benzene and other toxic emissions. Estimates of actual emission reductions are included in each nonattainment area control strategy discussion. A full description of the Stage II program, SIP Revisions for the Stage II Vapor Recovery Program, was initially proposed as a stand-alone document, but is now included in Appendix F.

Stage I Vapor Recovery (§§115.221-115.229)

Rules concerning the filling of gasoline storage tanks for motor vehicle fuel dispensing facilities (Stage I vapor recovery) were adopted in the late 1970's and early 1980's for some of the nonattainment counties, and in 1992 for perimeter nonattainment counties. Amendments to these rules were adopted in November 1993 to bring the Stage I program into alignment with the Stage II vapor recovery requirements and improve enforceability.

Accelerated Vehicle Retirement Program (§114.29)

TNRCC has developed a vehicle scrappage program, titled "Accelerated Vehicle Retirement Program". It will be included in §114.29 in Regulation IV. This program will not generate any SIP reduc-

tion credits as currently designed, but may produce some milestone credits if the scrappage is used in lieu of a monetary penalty.

The purpose of this program is to reduce mobile source emissions and provide additional flexibility for stationary sources in the nonattainment areas: Houston/Galveston, Dallas/Ft. Worth, El Paso, and Beaumont/Port Arthur. A scrappage program reduces VOC, NO_x , and CO emissions from mobile sources, such as automobiles and light duty trucks, by permanently removing high-emitting vehicles from the area-wide fleet. With this rule, stationary sources will have the opportunity to select the most cost effective approach to complying with federal and state regulations for ozone reduction.

(2) Changes in Mobile Source Emissions

(a) Federal Motor Vehicle Control Program

The FMVCP consists of more stringent tail pipe emission standards for cars. The current tail pipe standards for cars are 0.41 gram per mile (gpm) total hydrocarbon (HC), 3.4 gpm CO, and 1.0 gpm NO_x . Lower standards of 0.25 gpm nonmethane HC and 0.4 gpm NO_x , referred to as Tier I standards, will be phased in between 1994 and 1996 (the 3.4 gpm standard for CO does not change). EPA is required to study whether even tighter standards are needed,

technologically feasible, and economical. If EPA determines by 1999 that lower standards are warranted, the standards (Tier II standards) will be cut in half beginning with 2004 model year vehicles. Tier I standards are creditable toward the 15% ROP requirement.

(b) Federal Gasoline Volatility (Reid Vapor Pressure) Control Program

In 1991, EPA established nationwide RVP limits on gasoline of 9.0 psi. Beginning in 1992, a more stringent RVP limit of 7.8 psi was instituted for the specified summer ozone season in ozone nonattainment areas. For fuel blends containing gasoline and 10% ethanol, the psi limitation may be up to one psi higher, provided the gasoline portion of the mixture does not exceed the RVP limitations legal in the specific area. The RVP reduction is not creditable towards the 15% ROP requirement.

(c) Transportation Planning

Much of the responsibility for the planning and implementation of TCMs has been delegated to the regional and MPOs. TCMs are designed to either reduce the number of vehicles on the road or improve the flow of traffic. There are a variety of TCMs being considered, and each nonattainment area will choose from among them. A new rule, §114.23, concerning Transportation Control

Measures, has been adopted to provide enforceability to the TCM strategy selected for each area. The new rule contains TCM-specific definitions; designations of affected MPOs responsible for TCM development, funding, and implementation; requirements that MPOs submit specific information provided by agencies or entities responsible for implementation of TCM and a quantification of the emission reduction benefits; requirements that MPOs maintain and provide specific information regarding TCM implementation status; requirements that the MPOs modify the transportation improvement program for the area, as necessary, to correct implementation deficiencies; and prescribed enforcement actions to be taken if deficiencies remain unresolved or if knowing violations of TCM commitments occur. A summary and technical support material regarding TCMS for the Dallas/Fort Worth and the Houston/Galveston ozone nonattainment areas is located in Appendix K. Many TCMS have been identified as Phase II rules for various nonattainment areas. Those listed below are examples of TCMS which may be adopted by November 15, 1994. Those not needed will be deleted, and others may be added as they become available or identified. TCMS under consideration include the following:

- Employer Trip Reduction (ETR). This program, which was mandated by the FCAA, requires employers in severe nonattainment areas to implement programs to reduce work-related vehicle trips and miles travelled by employees. Employees who commute from attainment areas into non-

- attainment areas will also be affected. In the Houston/
Galveston area, this TCM is required, due to their
"Severe-17" classification.
- Restriction of certain roads or lanes to passenger buses
or high-occupancy vehicles, and programs for the provi-
sion of all forms of high-occupancy, shared-ride
services.
 - Trip-reduction ordinances.
 - Traffic flow improvement programs that reduce emissions.
Signal timing improvements and computer controlled signal
coordination/progression permit vehicles travelling in
the direction of the major traffic flow to receive a
green light whenever possible, thereby reducing idling
time. Intersections can also be modified to improve
traffic flow and reduce emissions.
 - Programs to limit or restrict vehicle use in the downtown
area or other areas of high emission concentration,
particularly during periods of peak use.
 - Programs to limit portions of road surfaces or certain
sections of the metropolitan area to bicycle or pedes-
trian use, and to construct new roads or paths for this
purpose. Also programs for secure bicycle storage facil-
ities and other facilities, including bicycle lanes, for
the protection and convenience of bicyclists, in both
public and private areas.

- Programs to reduce emissions due to extended idling of vehicles and extreme cold start conditions.
- Programs and ordinances to facilitate non-automobile travel, to facilitate provision and utilization of mass transit, and to generally reduce the need for single-occupant vehicle travel, as part of transportation planning and development efforts of a locality, including programs and ordinances applicable to new shopping centers, special events, and other centers of vehicle activity. Programs for improved public transit routes, service, frequency, and route modifications are also included. Other programs include reduced transit fare and municipal car pool/van pool programs.
- Programs to encourage the voluntary removal from use and the marketplace of pre-1980 model year light-duty vehicles and trucks.
- Programs and ordinances for parking incentives and disincentives to promote use of multi-occupancy vehicles or mass transit.
- Programs and ordinances to promote use of alternatively fueled vehicles.

(d) Vehicle I/M Program

The 1990 FCAA Amendments mandate vehicle emissions inspection and maintenance programs in areas that do not meet the NAAQS for

ozone. Congress also set minimum performance standards for these programs such as centralized testing, automation, extensive oversight, and registration enforcement.

EPA has promulgated federal rules that include specific performance standards for I/M programs. These rules, based on the direction provided in the FCAA Amendments, state what is expected by EPA. "Basic" programs are required for nonattainment areas with moderate ozone classifications. "Enhanced" programs are required for those areas with a 1980 population of 200,000 or more, which are classified as having serious, severe, or extreme ozone pollution levels. The Houston and El Paso nonattainment areas fall into this category and are required to have enhanced I/M programs. The Beaumont/Port Arthur nonattainment area is a serious nonattainment area, but its 1980 population of less than 200,000 qualifies it for a basic program. The Dallas/Fort Worth area is a moderate ozone nonattainment area and requires at least a basic program. However, currently available technical information indicates an increased likelihood that the Dallas/Fort Worth area will need to implement a more stringent program to comply with all mandates in the FCAA Amendments.

Certain Texas counties (Harris, Dallas, Tarrant, and El Paso) were required to have basic I/M programs in 1990. EPA performance standards for this testing assumed that 100% of the affected vehicle population would be tested and that 20% of the vehi-

cles would fail the test. Real-world I/M test designs and compliance and failure rates often vary from this standard. TNRCC was required to evaluate whether its programs achieved equivalent emission reductions.

TNRCC has received a letter from EPA Region 6 which states that El Paso complies with I/M reporting and design requirements during the 1990 calendar year. MOBILE5a I/M correction analyses show that the Dallas/Tarrant 1990 I/M program meets the EPA minimum reduction requirement, whereas the Harris County I/M program does not. The letter, I/M correction calculations and model input files are documented in Appendix M.

These corrections have been made for Dallas, Tarrant and Harris Counties and are included in the I/M reductions claimed for their respective nonattainment areas. The calculations and model input files are documented in Appendix M. TNRCC has a letter from EPA Region 6 which states that El Paso complies with I/M reporting and design requirements during the 1990 calendar year.

The emission control device inspection in all nonattainment areas will consist of two components: a test to verify presence of the catalytic convertor and the fuel inlet restrictor, and tail pipe emissions testing.

Inspection of the emissions control devices is performed through direct observation or through indirect observation using a mirror, video camera, or other visual aid. Also referred to as an "antitampering inspection," it shall include a determination as to whether each device is present and properly connected and whether it is the correct type for the certified vehicle configuration. Aftermarket parts, as well as the original equipment manufactured parts, may be considered correct if they are of the proper design and fit for the certified vehicle configuration.

EPA proposes to approve I/M SIP submissions which are consistent with the following standards and approved methods of testing for vehicle emissions.

(i) Emission Standards

Emission standards are limits for HC and CO emissions. In transient testing, units of measure are expressed as gpm, while in idle and steady state testing, units of measure are expressed in ppm or as a percentage. These standards will apply to all vehicles subject to the program. Failure of any standard will necessitate appropriate repairs. NO_x emission standards shall be applied to vehicles subject to a transient emission test.

(ii) Evaporative System Integrity
Test Procedure

This test procedure consists of a series of steps to measure an unacceptable drop in pressure, which may indicate a fuel tank vapor leak or an improperly fitting gas cap. Any damage done to the evaporative emission control system during the test shall be repaired at the expense of the inspection facility.

(iii) Evaporative System Purge Test
Procedure

This procedure measures the total purge flow (in standard liters) occurring in the vehicle's evaporative system during the transient emission test. The purge flow measurement system shall be connected to the purge portion of the evaporative system in series between the canister and the engine, preferably near the canister. The inspector shall be responsible for ensuring that all items disconnected during the conducting of the test are properly reconnected at the conclusion of the test procedure. Any damage to the evaporative emission control system during this test shall be repaired at the expense of the inspection facility.

(iv) Loaded-Mode, Two-Speed Test

This test is conducted using a BAR90 type analyzer and a dyna-

mometer. The dynamometer can range from a simple chassis dynamometer to a more sophisticated variable inertial weight dynamometer. Tail pipe emissions are sampled from the vehicle at a simulated speed of approximately 30 miles per hour and at idle. Most older-model year light-duty vehicles will be tested using the loaded-mode two-speed test.

(v) Preconditioned Two-Speed
Idle Test

This test is conducted using a BAR90-type analyzer without a dynamometer. The test sequence consists of a high-speed mode at approximately 2,500 revolutions per minute followed immediately by an idle mode. Additional preconditioning followed by an identical second-chance test is performed only if the vehicle fails the first test cycle. Dedicated four-wheel drive and heavy-duty vehicles will be tested using this test type.

(vi) Transient Emission Test

This test results in a mass emission measurement using a constant volume sampling system while the vehicle is driving through a computer monitored driving cycle on a dynamometer with inertial weight settings appropriate for the weight of the vehicle. The driving cycle includes acceleration, deceleration, and idle operating modes over 240 seconds as specified by EPA (IM240).

The 240-second sequence may be ended earlier using fast pass or fast fail algorithms, and multiple pass/fail algorithms may be used during the test cycle to eliminate false failures.

(e) Other Mobile Sources

The 1990 FCAA Amendments do not specifically mandate controls for non-road mobile sources. However, this category of VOC emissions represents a substantial source of emissions in many Texas non-attainment areas, particularly Dallas/Fort Worth. Therefore, implementing controls on non-road mobile sources is important to the overall reduction of ozone. Included in the non-road mobile category are construction and farm vehicles, marine vessels, locomotives, airplanes, utility engines, off-road motorcycles, and off-highway vehicles.

c) Emissions Tracking

(1) Annual EI Statements

Within three years after the date of the enactment of the FCAA Amendments of 1990, the state shall require that the owner or operator of each stationary source of NO_x or VOC emitting 25 TPY or greater provide the state with a statement of the actual emissions of NO_x or VOC from that source. Subsequent statements must be submitted to the state at least every year thereafter. These

requirements have been incorporated into §101.10 of the General Rules.

No later than the end of each three-year period after the submission of the initial inventory, the state shall submit to the EPA Administrator a revised EI. This inventory shall be a comprehensive, accurate, and current inventory of actual emissions from all sources.

(2) Milestone

Six years after the date of the enactment of the FCAA Amendments of 1990 and at three-year intervals thereafter, the state must determine whether each serious and worse nonattainment area has achieved the required levels of emission reductions or milestones. Attainment of the milestones will be determined by means of a "compliance demonstration" required by §182(g)(2). Compliance will be demonstrated by means of an area-wide inventory of actual emissions showing the required reduction. These demonstrations are due 90 days after each milestone.

If a state fails to meet a milestone compliance demonstration for any serious or severe area as required by §182(g)(2), the state must choose from three options: to be "bumped up" to the next highest classification, to implement additional control measures beyond those in the contingency plan which will already have been

triggered and implemented in order to achieve the next milestone, or to adopt an economic incentive program.

d) Contingency Plan Requirements

The general requirements for nonattainment plans under §172(c)(9) of the FCAA Amendments of 1990 specify that each plan must contain additional measures that will take effect without further rulemaking action by the state or EPA if an area either fails to meet the 1993 ROP requirements or to attain the NAAQS by the applicable date. States with moderate and above ozone nonattainment areas must include sufficient contingency measures in the November 1994 submittal which would, upon implementation, effect additional emissions reductions of up to 3.0% in the adjusted base year inventory within the following year.

After the TNRCC determines the rules required to meet the 15% net of growth requirement, contingency measures will be selected from the remaining set of rules proposed at the public hearings to obtain a minimum of 3.0% additional reduction. The contingency rules will be maintained in Chapter 115, except that a change in the rules concerning Counties and Compliance Schedule will reflect that the contingency rule will become effective whenever it is determined that a milestone has been missed and that the contingency measure is necessary to demonstrate the ROP target.

(1) Control Plans

All new rules will be proposed to be effective by November 15, 1996. The TNRCC will consider public testimony and refined emissions reduction estimates before determining which rules will be identified as contingency measures in each of the nonattainment areas. If the contingency measures are needed, their compliance dates will then be changed to reflect this status.

(2) Contingency Trigger

The immediate (requiring no further rulemaking activity) implementation of contingency measures will be triggered by the failure to meet the ROP target or to attain the NAAQS by the applicable milestones.

The 1996 EI must show a 15% reduction (net of growth) in VOC from the 1990 EI. If the TNRCC has an indication that one or more nonattainment areas has failed to make this or any milestone, it may choose to initiate implementation of all or a part of the 3.0% contingency measures prior to being notified by EPA. These rules will be derived from those controls listed in the control measure catalog, but not used in the initial 15% reduction plan or from other control measures identified by the TNRCC.

e) Photochemical Assessment Monitoring Stations

The 1990 FCAA Amendments require states with ozone nonattainment areas to undertake enhanced ozone ambient monitoring. States are required to develop a photochemical assessment monitoring stations (PAMS) network design and establish monitoring sites.

The State of Texas will implement PAMS as required in 40 CFR Part 58 as amended February 12, 1993. This program is required in all ozone nonattainment areas designated as serious, severe, or extreme. The state will also implement these requirements in any existing ozone nonattainment area reclassified to serious, severe, or extreme, or in any newly designated ozone nonattainment area classified as serious, severe, or extreme.

The state will amend its State and Local Air Monitoring Section (SLAMS) and its National Air Monitoring Stations (NAMS) monitoring systems to include the PAMS requirements.

The state will develop its PAMS network design and establish monitoring sites pursuant to 40 CFR Part 58, in accordance with an approved network description, and as negotiated with EPA through the 105 grant process on an annual basis.

The state will meet quality assurance requirements as contained in 40 CFR Part 58, Appendix A. The state's PAMS network descrip-

tion will meet the criteria as outlined in 40 CFR Part 58.41. In accordance with Part 58.43, the state's PAM monitors will meet the monitoring methodology requirements as contained in 40 CFR Part 58, Appendix C.

The completion of the PAMS network will be phased in as contained in 40 CFR Part 58, Appendix D over a period of five years as referenced in Part 58.44. The five-year period is defined as five years after:

- (1) February 12, 1993;
- (2) date of redesignation or reclassification of any existing ozone nonattainment area to serious, severe, or extreme; or
- (3) designation of a new area classified as a serious, severe, or extreme ozone nonattainment area.

A description of the monitoring network and implementation schedule will be on file for public inspection.

b. Dallas/Fort Worth Ozone Control Strategy

1) General

a) Air Quality Analysis--Why These Reductions
Are Needed

The 1990 Amendments to the FCAA classified the Dallas/Fort Worth CMSA as a moderate nonattainment area. Areas classified as moderate are required to include only those counties which have been shown to be nonattainment areas themselves. Therefore, the Dallas/Fort Worth nonattainment area includes Collin, Dallas, Denton, and Tarrant Counties. The remaining counties in the CMSA; Ellis, Johnson, Kaufman, Parker, and Rockwall have elected to participate in the planning process for TCMs; however, only TCM reductions in the four nonattainment counties are creditable toward the 15% ROP SIP. The Dallas/Fort Worth nonattainment area has an ozone design value of 0.14 ppm, which places the area at the lower end of the moderate classification boundary. Currently, ozone air quality trends appear favorable. The number of times the ozone level exceeded the federal level of 0.12 ppm has decreased from 12 in 1984 to five in 1992. However, the Dallas/Fort Worth nonattainment area will be required to demonstrate attainment of the NAAQS in 1996, and it is vital that further progress be made.

2) Estimated Emission Reductions

The current level of ROP Base Year VOC emissions (also known as anthropogenic emissions) for the Dallas/Fort Worth nonattainment area is 542.68 tons per day (TPD). Table 15 summarizes the breakdown of anthropogenic emissions in the Dallas/Fort Worth area by emission categories.

TABLE 15

Anthropogenic Emissions in the Dallas/Fort Worth Area

CATEGORY	AMOUNT IN TPD	PERCENTAGE
Point	66.64	12
Area	174.25	32
Non-Road Mobile	97.44	18
On-Road Mobile	204.35	38

a) 15% Targeted Reductions

The 1990 FCAA Amendments specified several mandatory control measures for the Dallas/Fort Worth nonattainment area. The most important of these was the reduction of VOC by a minimum of 15% below the level calculated in the 1990 emissions inventory. This 15% must be net of growth and several pre-1990 federal controls may not be included as reduction credits. The 15% reduction must be achieved by November 15, 1996. Controls to achieve a further 3.0% reduction without any further rulemaking must be held in

reserve as contingency measures should the state fail to make any one of its milestones. In addition to the 15% reduction, further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years must be achieved in the emissions inventory until attainment is demonstrated as part of the attainment demonstration due November 15, 1994. Attainment of the NAAQS for ozone in the Dallas/Fort Worth area is discussed in §VI.B.7.b.3) of this document.

The following §§VI.B.7.b.2)b) and c), will detail the regulations and controls developed to enable Dallas to achieve the 15% required reduction.

b) Stationary and Area Source Controls Toward
15% Reduction

Stationary or point sources in the Dallas/Fort Worth nonattainment area account for only 12% of the total anthropogenic emissions; however, area sources account for a much larger fraction, estimated to be 32%. There are several federally mandated programs that will be creditable towards the 1993 ROP SIP, but additional measures will be needed in order for the Dallas/Fort Worth area to meet its goal.

(1) Emissions Reductions from RACT Catch-Ups
and Leveling the Playing Field

The Dallas/Fort Worth nonattainment area will receive creditable reductions from RACT catch-ups and leveling the playing field. Table 16 identifies reductions due to RACT catch-ups and RE improvements for both point and area sources. Reductions for leveling the playing field are included under RACT catch-ups. For an explanation of the formulas used to calculate the reductions, see Appendix I. For an explanation of the catch-up rules, see Appendix D.

(2) Stage II Vapor Recovery

Stage II Vapor Recovery will be implemented in the Dallas/Fort Worth nonattainment area. This program will control gasoline vapors escaping during the refueling of motor vehicles. An explanation of the Stage II program can be found in §VI.B.7.a.4)b)(1)(d) of this plan. The estimated reduction in VOC emissions in the Dallas/Fort Worth area is identified in Table 17.

(3) New Control Measures to be Implemented

The CMC in Appendix E includes a listing of control measures designed specifically for the Dallas/Fort Worth nonattainment

POINT SOURCES

DALLAS -Reductions Due to RACT Catch-ups

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits (TPD)	CE-90	CE-96	Non-Permitted		Permitted		Catch-up Reduction 1990 (TPD)	RE Reduction 90-96 (TPD)	New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96			
A Cans	0.00	0.00	0.00	0.0%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.000	0.000
B Metal Coils	0.00	0.00	0.00	0.0%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
C Paper Products	0.02	0.03	0.03	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.002	0.028
D Fabrics	0.00	0.00	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
E Auto New-misc. metal	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
F Metal Furniture	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H Appliances	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
I Gasoline Plants	0.00	0.00	0.00	0.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
J Storage Tanks-Fixed	0.00	0.00	0.00	0.0%	61.9%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
K Pat.Ref.:Vacuum Producing Sys.	0.00	0.00	0.00	0.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
K VOC/Water Separators	0.00	0.00	0.00	0.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K Process Unit Turnarounds	0.00	0.00	0.00	0.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
M Gasoline Terminals	0.00	0.00	0.00	0.0%	93.3%	87.5%	90.0%	0.0%	0.0%	0.000	0.000	0.000
O Surface Cleaning	0.08	0.08	0.08	0.0%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.004	0.076
P Surface Coating Misc.Metals	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
Q Factory Fin. Wood	0.24	0.30	0.16	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.062	0.012	0.225
R Graphic Arts	0.48	0.58	0.17	0.0%	60.0%	70.0%	75.0%	85.0%	90.0%	0.172	0.023	0.385
S Petroleum Refinery Equip	0.00	0.00	0.00	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
T Roof Tanks-Ext.Float	0.00	0.00	0.00	0.0%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	0.000	0.000
Z Resins-Polyethylene	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z Polypropylene	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z Polystyrene	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
AA Natural Gas Processing Plants	0.02	0.02	0.00	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.014	0.000	0.006
AB SOCFI	0.00	0.00	0.00	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
AC Air Oxidation SOCFI	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
TOTALS										0.249	0.041	0.720

DALLAS RE Improvement only

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up RE		
						RE-90	RE-96	RE-90	RE-96	Reduction 1990 (TPD)	Reduction 90-96 (TPD)	New1996 (TPD)
A	0.90	0.90	0.36	55.2%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.032	0.868
B	0.49	0.62	0.00	55.9%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.028	0.592
C	0.55	0.61	0.18	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.031	0.579
D	0.06	0.07	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.004	0.066
E	2.63	5.00	1.28	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.241	4.759
F	0.20	0.24	0.17	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.013	0.227
H	0.09	0.09	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.004	0.086
I	0.72	1.47	0.16	77.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.151	1.319
J	0.46	0.71	0.22	61.9%	61.9%	80.0%	85.0%	90.0%	95.0%	0.000	0.045	0.665
K	0.00	0.00	0.00	100.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
K	0.00	0.00	0.00	95.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K	0.00	0.00	0.00	98.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
M	2.91	9.83	1.60	93.3%	93.3%	87.5%	90.0%	91.5%	94.0%	0.000	1.301	8.529
O	1.18	1.51	0.38	55.7%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.073	1.437
P	1.76	2.25	0.86	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.111	2.139
Q	0.23	0.27	0.01	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.014	0.256
R	4.95	9.16	6.17	60.0%	60.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.532	8.628
S	0.00	0.00	0.00	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
T	0.23	0.65	0.15	61.9%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	0.018	0.632
Z	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z	0.43	0.48	0.48	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.141	0.339
AA	0.00	0.00	0.00	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
AB	0.08	0.10	0.01	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.100
AC	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
TOTALS										0.000	2.738	31.222

AREA SOURCES

DALLAS

-Reductions Due to RACT Catch-ups

Group Category		Growth Factor	AREA SOURCES							
			EI 1990 (TPD)	CE-90	CE-96	RE-90	RE-96	RP-90	RP-96	CR 90-96
A	Metal Containers-Collin,Denton	1.0832	0.0000	55.2%	55.2%	96.0%	99.0%	0.0%	75.0%	0.000
B	Sheet Strip Coil-Collin,Denton	1.0832	0.0000	55.9%	55.9%	70.0%	75.0%	0.0%	75.0%	0.000
E	Auto New-Collin,Denton	1.0832	2.6721	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.085
H	Appliances-Collin,Denton	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.000
L	Cutback Asphalt-Collin,Denton	1.0002	0.1136	65.0%	65.0%	80.0%	85.0%	0.0%	80.0%	0.050
N	Tank Truck Unloading-Collin,Denton	1.2011	2.6472	95.0%	95.0%	80.0%	85.0%	0.0%	95.0%	2.439
O	Surface Cleaning-Collin,Denton	1.0832	3.0918	55.7%	55.7%	70.0%	75.0%	0.0%	100.0%	1.399
P	Electrical Insulation-Collin,Denton	1.0832	0.2091	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.071
P	Other Trans Equip-Collin, Denton	1.0832	0.0325	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.011
P	Machinery/Equip-Collin,Denton	1.0832	0.2501	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.085
Q	Factory Fin. Wood-Collin,Denton	1.1058	0.0408	55.6%	55.6%	80.0%	85.0%	0.0%	75.0%	0.016
Y	Tank Trucks in Transit-Collin,Denton	1.0002	0.0390	95.0%	95.0%	80.0%	85.0%	0.0%	100.0%	0.031
	TOTAL S		9.0962							4.188

RE Improvement only

Group Category		Growth Factor	(TPD)							
			EI 1990	CE-90	CE-96	RE-90	RE-96	RP-90	RP-96	CR 90-96
A	Metal Containers-Dallas,Tarrant	1.0832	3.7213	55.2%	55.2%	96.0%	99.0%	75.0%	75.0%	0.083
B	Sheet Strip Coil-Dallas,Tarrant	1.0832	0.7172	55.9%	55.9%	70.0%	75.0%	75.0%	75.0%	0.023
E	Auto New-misc. metal-Dallas,Tarrant	1.0832	1.8178	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.058
H	Appliances-Dallas,Tarrant	1.0832	0.4134	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.013
L	Cutback Asphalt-Dallas,Tarrant	1.0002	0.4866	65.0%	65.0%	80.0%	85.0%	80.0%	80.0%	0.022
N	Tank Truck Unloading-Dallas,Tarrant	1.2011	6.3836	95.0%	95.0%	80.0%	85.0%	95.0%	95.0%	1.245
O	Surface Cleaning-Dallas,Tarrant	1.0832	8.2606	55.7%	55.7%	70.0%	75.0%	100.0%	100.0%	0.408
P	Electrical Insulation-Dallas,Tarrant	1.0832	0.3653	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.012
P	Other Trans Equip-Dallas,Tarrant	1.0832	2.0792	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.066
P	Machinery/Equip-Dallas,Tarrant	1.0832	1.5266	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.049
Q	Factory Fin. Wood-Dallas,Tarrant	1.1058	0.5770	55.6%	55.6%	80.0%	85.0%	75.0%	75.0%	0.020
V	Tank Trucks in Transit-Dallas,Tarrant	1.0002	0.0768	95.0%	95.0%	80.0%	85.0%	100.0%	100.0%	0.015
*	Arch.-Coatings-Dallas,Tarrant	1.0757	15.0071	3.0%	3.0%	50.0%	100.0%	75.0%	75.0%	0.184
TOTALS			41.4325							2.197

area ranked in priority order based on a variety of criteria. Most, if not all, of the measures will need to be implemented in the area to achieve a 15% net of growth and the 3.0% contingency emission reductions of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x in VOC emissions, by the 1996 milestone. 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. Contingency measures in the Dallas/Ft. Worth area will be selected after consultation with local government organizations.

TABLE 17
ESTIMATES TOWARDS ROP SIP - DALLAS/FORT WORTH

EMISSIONS INVENTORY	1990	Percent	Growth	1996	Percent
Area Sources	174.25	32.1%	6.0%	184.79	30.5%
Point Sources	66.64	12.3%	8.2%	72.10	11.9%
On-road Mobile Sources	204.35	37.7%	18.0%	241.14	39.8%
Off-road Mobile Sources	97.44	18.0%	11.0%	108.19	17.8%
TOTALS	542.68		11.7%	606.22	

ESTIMATED REDUCTIONS

MANDATED RULES	96 Projected TPD	Reduction TPD	% of Required	Cumulative %
Catchups	9.82	4.19	2.9%	2.9%
Vehicle Refueling (Stage II)	22.39	18.19	12.5%	15.3%
Aircraft Stage 3	5.40	0.60	0.4%	15.7%
Other VOC storage, transport	0.06	0.05	0.0%	15.8%
FMVCP Tier I	241.14	1.83	1.3%	17.0%
Basic I/M w/IM240 test	241.14	43.79	30.0%	47.0%
Major Source Bakeries	0.91	0.12	0.1%	
SUBTOTAL		68.77	47.1%	

PHASE I RULES

Auto Refinishing	14.74	4.51	3.1%	50.2%
Municipal Landfills	6.36	3.49	2.4%	52.6%
CAFB Fire Training Pit Closur	1.20	1.20	0.8%	53.4%
RE Improvements	73.37	4.77	3.3%	56.7%
Gas Utility Engines	65.21	6.53	4.5%	61.2%
Reform Gas (on-road)	241.14	33.18	22.7%	83.9%
Reform Gas (off-road)	80.93	3.17	2.2%	86.1%
TCMs	241.14	6.94	4.8%	90.8%
SUBTOTAL		63.79	43.7%	

PHASE II RULES and *CONTINGENCY RULES

Acetone replacement	0.87	0.29	0.2%	91.0%
Architectural Coatings	31.08	7.31	5.0%	96.0%
Consumer/Comm Products	32.08	3.45	2.4%	98.4%
Gasoline Terminals	7.66	2.17	1.5%	99.9%
Fugitives	0.11	0.07	0.0%	99.9%
Wood Furniture	10.38	1.35	0.9%	100.9%
*Vessel Cleaning	0.25	0.20	0.1%	101.0%
*Dry Cleaning-Naphtha	3.55	1.96	1.3%	102.3%
*Offset Printing	1.92	0.85	0.6%	102.9%
*Commercial Bakeries	0.91	0.15	0.1%	103.0%
*I/M Improvement	241.14	4.52	3.1%	106.1%
*TCMs	241.14	2.03	1.4%	107.5%
*I/M & FMVCP 1997	241.14	3.83	2.6%	110.1%
*Utility Engines 1997	65.21	6.65	4.6%	114.7%
SUBTOTAL		34.82	23.9%	

Target Improvement	145.93	100.0%	26.9%
Phase I/II/Mandated Rules	147.20	100.9%	
Excess (Shortfall)	1.27	0.9%	
Required Contingency	16.28		3.0%
Target+Contingency	162.21	100.0%	29.9%
Total Reductions ID'd	167.38	103.2%	
Excess (Shortfall)	5.17	3.2%	

4/15/94

Proposed rules will be included in the General Rules and Regulations IV and V (30 TAC Chapters 101, 114, and 115). The explanation of and formula for creating the CMC is located in Appendix E.

Table 17 identifies the estimated reductions toward the 1993 ROP goal that are available for each control measure, both mandated and optional. This information, combined with the CMC, has been used to formulate a ranking of the most effective and cost efficient rules for a particular nonattainment area. This table is intended to identify options available to the state and is not intended to specify reduction targets for each category.

c) Mobile Source Controls

(1) Transportation Control Measures

TCMs will be implemented in the Dallas/Fort Worth nonattainment area as necessary. Those that will be considered include: high occupancy vehicle lanes, intersection improvements, travel demand incentives, bikeways, incident detection and response programs, park-and-ride lots, signal timing/progression, grade separations, enhanced travel demand management, commuter rail, light rail, new and widened roadways, discount transit fare, accelerated retirement of older vehicles, and a mandatory ETR Program. A full description of the TCMs is included in Appendix K. The North

Central Texas Council of Governments (NCTCOG) has specifically committed to those measures identified in Appendix K.

(2) Vehicle Inspection/Maintenance Program

The Dallas/Fort Worth Nonattainment Area includes Dallas, Tarrant, Denton, and Collin Counties. A test-only contractor-operated I/M program utilizing a combination of BAR90 and IM240 exhaust emission test equipment and procedures shall be conducted. After the trial period, chargeable testing is scheduled to begin July 1, 1994.

All 1968 to 1985 model year light-duty vehicles and light-duty trucks will be subject to a two-speed loaded mode test, a pressure test, and a visual antitampering check of the catalytic convertor and inlet restrictor. Exhaust gas testing for HC, CO, and carbon dioxide (CO₂) is required.

All 1986 and newer model year light-duty vehicles and light-duty trucks will be subject to an IM240 test, a pressure test, a purge test, and a visual antitampering check of the catalytic convertor and inlet restrictor. Exhaust gas testing for HC, CO, CO₂, and NO_x is required.

All heavy-duty trucks will be subject to a preconditioned two-speed idle test, a pressure test, and a visual antitampering

check of the catalytic convertor and inlet restrictor. Exhaust gas testing for HC, CO, and CO₂ is required.

Dedicated four-wheel drive vehicles, meaning any constant four-wheel drive vehicle which cannot be converted to two-wheel drive except by removing one of the vehicle's drive shafts, shall be subject to a preconditioned two-speed idle test.

(3) Reformulated Gasoline and Clean
Alternative Fuels

On January 1, 1995, the Dallas/Fort Worth nonattainment area will begin using reformulated gasoline. This type of fuel has significant air quality benefits for both on-road and non-road engines.

The use of clean alternative fuels such as natural gas, propane, and alcohol may have some application by 1996, and there will be limited mandatory use by 1998. The TNRCC will work with local municipal planning organizations to determine the number of clean alternative fuel vehicles.

3) Demonstration of Attainment/Modeling Committal
SIP

The TNRCC commits to submitting a modeled demonstration of attainment for the Dallas/Fort Worth nonattainment area using the

UAM by November 15, 1994 (see Appendix J). The Dallas/Fort Worth nonattainment area will be required to demonstrate monitored attainment of the NAAQS on November 15, 1996. Demonstration of attainment will be based on monitoring data from 1994, 1995, and 1996.

4) Contingency Plan

The Dallas/Fort Worth nonattainment area will be required to develop a contingency plan. This plan would provide for the implementation of an additional 3.0% emission reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x, should the area fail to make any of its milestone demonstrations. 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 contingency measures would have to be implemented without any further rulemaking activity. Contingency measures in Dallas/Ft. Worth will be selected after consultation with local government organizations. For a general discussion of contingency plans see §VI.B.7.a.4)d)(2). For a general discussion of control measures, see §VI.B.7.a.4)b)(1)(c)(i), (ii), and

(iii). The estimated emissions reductions available for each potential contingency measure in the Dallas/Fort Worth nonattainment area can be found in Table 17.

c. El Paso Ozone Control Strategy

1) General

a) Air Quality Analysis--Why These Reductions
Are Needed

The 1990 Amendments to the FCAA classified El Paso as a serious nonattainment area. El Paso County is the only county included in the nonattainment area designation. The El Paso nonattainment area has a design value of 0.17. In recent years, the El Paso nonattainment area has shown improvement in ozone air quality; however, significant reductions are still necessary.

El Paso is in a unique situation because of its proximity to Ciudad Juarez, Mexico. All nonattainment areas in Texas are required to implement the 1993 ROP SIP reduction and additional reductions as mandated by the FCAA. However, in recognition of El Paso's close proximity to Juarez, a computer model demonstration of attainment will be allowed using U.S. emissions alone. If the computer simulation shows El Paso in compliance with the NAAQS, it will be considered an attainment area. By using this

method, El Paso will avoid a more serious nonattainment classification and the corresponding more stringent controls should ambient air monitoring still show ozone levels in excess of the NAAQS in 1999.

2) Estimated Emission Reduction

The current level of 1990 ROP base year VOC emissions (also known as anthropogenic emissions) for the El Paso nonattainment area is 74.51 TPD. Table 18 summarizes the breakdown of emissions in the El Paso area by emission categories.

TABLE 18
Anthropogenic Emissions in the El Paso Area

CATEGORY	AMOUNT IN TPD	PERCENTAGE
Point	9.47	13
Area	27.43	37
Non-Road Mobile	11.34	15
On-Road Mobile	25.73	35

a) 15% Targeted Reductions

The 1990 FCAA Amendments specified several mandatory control measures for the El Paso nonattainment area. The most important of these was the reduction of VOC by a minimum of 15% below the level calculated in the 1990 emissions inventory. This 15% must

be net of growth and several pre-1990 federal controls may not be included as reduction credits. The 15% reduction must be achieved by November 15, 1996. Controls to achieve a further 3.0% reduction without any further rulemaking must be held in reserve as contingency measures should the state fail to make any one of its milestones. In addition to the 15% reduction, further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years must be achieved until attainment is demonstrated as part of the attainment demonstration due November 15, 1994. Attainment of the NAAQS for the El Paso area is discussed in §VI.B.7.c.3).

The following §§VI.B.7.c.2)b) and c) will discuss the regulations and controls developed to enable the El Paso area to achieve the 15% required reduction.

b) Stationary and Area Source Controls Toward 15%

Stationary or point sources in the El Paso area account for 13% of the total anthropogenic emissions. Area sources account for another 37%. There are several federally mandated programs which will be creditable towards the 1993 ROP SIP, but additional measures will be needed in order for the El Paso area to meet its goal.

(1) Emissions Reductions from RACT Catch-Ups and Leveling the Playing Field

The El Paso nonattainment area will receive creditable reductions from RACT catch-ups and leveling the playing field. Table 19 identifies reductions due to RACT catch-ups and rule effectiveness improvements for both point and area sources. Reductions for leveling the playing field are included under RACT catch-ups. For an explanation of the formulas used to calculate the reductions, see Appendix I. For an explanation of the catch-up rules, see Appendix D.

(2) Stage II Vapor Recovery

Stage II Vapor Recovery will be implemented in the El Paso nonattainment area. This program will control gasoline vapors escaping during the refueling of motor vehicles. An explanation of the Stage II program can be found in §VI.B.7.a.4)b)(1)(d) of this plan. The estimated reduction in VOC emissions in the El Paso area is identified in Table 20.

(3) New Control Measures to be Implemented

The CMC in Appendix E includes a listing of control measures designed specifically for the El Paso nonattainment area ranked in priority order based on a variety of criteria. Most, if not

all, of the measures will need to be implemented in the area to achieve a 15% net of growth and the 3.0% contingency emission reductions of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x, by the 1996 milestone. Underlying this substitution provision is the recognition that NO_x controls may

EL PASO -Reductions Due to RACT Catch-ups

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up	RE	New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96	Reduction 1990 (TPD)	Reduction 90-96 (TPD)	
M Gasoline Terminals	0.86	3.00	0.07	86.6%	93.3%	87.5%	90.0%	91.5%	94.0%	0.709	0.293	1.998
R Graphic Arts-Publication Roto	0.00	0.00	0.00	75.0%	75.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.000	0.000
R Packaging Rotogravure	0.00	0.00	0.00	65.0%	65.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.000	0.000
R Flexographic	0.00	0.00	0.00	60.0%	60.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.000	0.000
TOTALS										0.709	0.293	1.998

EL PASO RE Improvement only

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up	RE	New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96	Reduction 1990 (TPD)	Reduction 90-96 (TPD)	
A Cans	0.00	0.00	0.00	55.2%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.000	0.000
B Metal Coils	0.00	0.00	0.00	55.9%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
C Paper Products	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
D Fabrics	0.10	0.10	0.10	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.005	0.095
E Auto New-misc. metal	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
F Metal Furniture	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H Appliances	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
I Gasoline Plants	0.10	0.34	0.34	77.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.043	0.297
J Storage Tanks-Fixed	0.01	0.01	0.01	61.9%	61.9%	80.0%	85.0%	90.0%	95.0%	0.000	0.001	0.009
K Pet.Ref.:Vacuum Producing Sys.	0.16	0.13	0.00	100.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.032	0.098
K VOC/Water Separators	0.00	0.00	0.00	95.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K Process Unit Turnarounds	0.00	0.00	0.00	98.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
M Gasoline Terminals	0.86	3.00	0.07	93.3%	98.0%	87.5%	90.0%	91.5%	100.0%	0.656	0.447	1.896
O Surface Cleaning	0.00	0.00	0.00	55.7%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
P Surface Coating Misc.Metals	0.22	0.26	0.26	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.014	0.246
Q Factory Fin. Wood	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
R Graphic Arts	0.00	0.00	0.00	60.0%	60.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.000	0.000
S Petroleum Refinery Equip	1.79	1.78	0.81	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	1.780
T Roof Tanks-Ext.Float	0.72	2.30	0.18	61.9%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	0.063	2.237
Z Resins-Polyethylene	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z Polypropylene	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z Polystyrene	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
AA Natural Gas Processing Plants	0.01	0.01	0.10	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.010
AB SOCMl	0.00	0.00	0.00	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
AC Air Oxidation SOCMl	0.00	0.00	0.00	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
TOTALS										0.656	0.606	6.668

AREA SOURCES

EL PASO -Reductions Due to RE Improvements

Group Category	Growth Factor	(TPD)								
		EI 1990	CE-90	CE-96	RE-90	RE-96	RP-90	RP-96	CR 90-96	
A	Metal Containers	1.0832	0.0000	55.2%	55.2%	96.0%	99.0%	75.0%	75.0%	0.000
B	Sheet Strip Coil	1.0832	0.0000	55.9%	55.9%	70.0%	75.0%	75.0%	75.0%	0.000
E	Auto New	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.000
H	Appliances	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.000
L	Cutback Asphalt	1.0002	0.0000	65.0%	65.0%	80.0%	85.0%	80.0%	80.0%	0.000
N	Tank Truck Unloading	1.2358	0.8478	95.0%	95.0%	80.0%	85.0%	95.0%	95.0%	0.170
O	Surface Cleaning	1.0832	3.9162	0.0%	55.7%	70.0%	75.0%	100.0%	0.0%	0.000
P	Electrical Insulation	1.0832	0.0691	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.002
P	Other Trans Equip	1.0832	0.0151	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.000
P	Machinery/Equip	1.0832	0.2982	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.010
Q	Factory Fin. Wood	1.1058	0.1466	55.6%	55.6%	80.0%	85.0%	75.0%	75.0%	0.005
V	Tank Trucks in Transit	1.0002	0.0102	95.0%	95.0%	80.0%	85.0%	100.0%	100.0%	0.002
TOTALS			5.3032							0.189

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.

Proposed rules will be included in the General Rules and Regulations IV and V (30 TAC Chapters 101, 114, and 115). The explanation of and formula for creating the CMC is located in Appendix E.

Table 20 identifies the estimated reductions toward the 1993 ROP goal that are available for each control measure, both mandated and optional. This information, combined with the CMC, has been used to formulate a ranking of the most effective and cost efficient rules for a particular nonattainment area. This table is intended to identify options available to the state and is not intended to specify reduction targets for each category.

The TNRCC has relied upon the provisions of §818 of the FCAA concerning International Border Areas to formulate a strategy for dealing with El Paso's unique shared airshed. This section provides nonattainment areas on an international border a mechanism to avoid being "bumped up" to the next higher classification if it fails to attain by the attainment deadline. El Paso can

elect to show via a technical analysis that it would have attained by the mandatory deadline "but for" emissions emanating from Mexico.

TABLE 20
ESTIMATES TOWARDS ROP SIP - EL PASO

EMISSIONS INVENTORY	1990	Percent	Growth	1996	Percent
Area Sources	27.43	37.1%	7.8%	29.58	35.8%
Point Sources	9.47	12.8%	-1.4%	9.34	11.3%
On-road Mobile Sources	25.73	34.8%	21.2%	31.18	37.7%
Off-road Mobile Sources	11.34	15.3%	10.9%	12.58	15.2%
TOTALS	73.97		11.8%	82.68	

ESTIMATED REDUCTIONS

MANDATED RULES:	96 Projected TP	Reduction TPD	% of Required	Cumulative %
Catchups	2.00	0.71	3.3%	3.3%
Vehicle Refueling (Stage II)	2.30	2.03	9.5%	12.8%
Aircraft Stage 3	0.29	0.02	0.1%	12.9%
FMVCP Tier I	31.18	0.25	1.2%	14.1%
Enhanced I/M	31.18	6.32	29.6%	43.7%
UBTOTAL		9.33	43.7%	

PHASE I RULES

Auto Refinishing	2.84	1.13	5.3%	48.9%
Offset Printing	0.85	0.56	2.6%	51.6%
Vessel Loading	0.40	0.32	1.5%	53.1%
Fugitives	1.79	1.13	5.3%	58.3%
RE Improvements	12.07	0.61	2.9%	61.2%
Gas Utility Engines	7.57	0.84	3.9%	65.1%
TCMs	31.18	0.30	1.4%	66.5%
SUBTOTAL		4.89	22.9%	

PHASE II/*CONTINGENCY RULES

Architectural Coatings	5.25	1.42	6.6%	73.2%
Consumer/Comm Products	5.69	0.61	2.9%	76.0%
Municipal Landfills	0.38	0.21	1.0%	77.0%
Industrial Wastewater	0.37	0.27	1.3%	78.3%
Bulk Gasoline Terminals	0.86	0.82	3.8%	82.1%
Outdoor Burning	0.81	0.40	1.9%	84.0%
Other Coatings	1.48	0.30	1.4%	85.4%
Wood Furniture	0.29	0.04	0.2%	85.6%
RVP (on-road)	31.18	2.61	12.2%	97.8%
RVP (off-road)	12.58	0.09	0.4%	98.2%
I/M Improvement	31.18	0.40	1.9%	100.1%
*Vessel Cleaning	0.13	0.09	0.4%	100.5%
*Dry Cleaning-Naphtha	0.54	0.28	1.3%	101.8%
*Commercial Bakeries	0.22	0.05	0.2%	102.0%
*Pesticides	0.32	0.08	0.4%	102.4%
*TCMs	31.18	0.53	2.5%	104.9%
*I/M & Tier I 1997	31.18	0.63	2.9%	107.8%
*Utility Engines 1997	7.70	0.79	3.7%	111.5%
SUBTOTAL		9.62	45.0%	
Target Improvement		21.38	100.0%	28.9%
Phase I/II/Mandated Rules		21.39	100.1%	
Excess (Shortfall)		0.01	0.1%	
Required Contingency		2.22		3.0%
Target+Contingency		23.60	100.0%	31.9%
Total Reductions ID'd		23.84	101.0%	
Excess (Shortfall)		0.24	1.0%	

4/14/94

Texas has elected to take advantage of this provision and is currently performing §818 modeling exercises which will be submitted to EPA by November 15, 1994, in lieu of an attainment demonstration as required for other serious ozone nonattainment areas. This analysis will include only emissions for the El Paso side of the border as comparable data is not yet available for Juarez, Mexico. This provision, it should be noted, does not provide for any relaxation of current or future controls, nor does it signify that El Paso will not continue to strive to reach attainment of the NAAQS. It merely states that El Paso will not be subject to increasingly more stringent federally mandated control measures if the air quality problem is not solely generated in El Paso. This approach has the support of local government and civic leaders. In addition, the citizens of El Paso can institute local programs, like improved TCMS, if they desire.

The TNRCC is well aware of the unique challenges involved in improving air quality in the El Paso-Juarez airshed. There have been several important programs to improve coordination and air quality between the U.S. and Mexico. For example, basin-wide air quality modeling is required by the 1983 La Paz Agreement between the U.S. and Mexico. The TNRCC is working with EPA and the Mexican national, state, and city governments to establish an air quality monitoring network, develop a basin-wide CO control strategy, and complete an emissions inventory for Juarez.

c) Mobile Source Controls

(1) Transportation Control Measures

TCMs that will be implemented in the El Paso nonattainment area include: a transit services central operations facility, commuter vanpooling, transit terminal park-and-ride lots, a City Hall transit plaza, an Oregon Street mall, a San Antonio Avenue transit plaza, a traffic surveillance system design, paving of unpaved streets and alleys, streetcar reactivation, a compressed natural gas fueling facility, an upgrade of the City Transportation Management Center, and Central Business District signalization improvement.

(2) Vehicle I/M Program

The El Paso nonattainment area is defined as El Paso County only. A test-only, enhanced I/M program will be implemented using managing and operating contractor systems.

After extensive acceptance testing from September 1, 1994 to December 31, 1994, the program will begin full testing on January 1, 1995. The manager shall provide training to inspectors at contractor operated facilities in accordance with the contract.

The TNRCC may initiate testing with less stringent cut points in 1995 than will be required in 1998.

All 1968 and newer model year light-duty vehicles and light-duty trucks will be subject to the inspection program. Exhaust gas testing for HC, CO, and CO₂ is required.

All heavy-duty trucks will be subject to a preconditioned two-speed idle and pressure test and a visual two-point antitampering check (if factory equipped with catalytic converter and inlet restrictor). Exhaust gas testing for HC, CO, and CO₂ is required.

Dedicated four-wheel drive vehicles, meaning any constant four-wheel drive vehicle which cannot be converted to two-wheel drive, except by removing one of the vehicle's drive shafts, shall be subject to a preconditioned two-speed idle test.

The TNRCC will monitor and evaluate the program by analysis of summary statistics and effectiveness evaluations of the enforcement mechanism, the quality assurance system, and the quality control program. The initial report will provide separate summary statistics for the contractor-operated and the decentralized test networks.

The previous sections also contained specifications for equipment for the two-speed, loaded-mode test. BAR84 and BAR90 analyzer specifications are available from the TNRCC and were included in previous submittals to EPA. Beginning on January 1, 1995, the program must be enforced through the use of denial of vehicle registration for 1990 and newer model year vehicles rather than by windshield sticker.

The TNRCC will provide biennial reports regarding El Paso's I/M program to EPA as required in §182(c)(3)(C) of the FCAA. The report shall assess the emission reductions achieved by the program based on the data collection during the inspection and repair of vehicles. The methods used to assess the emission reductions shall be established by EPA. The reports may address any changes made in program design, funding, personnel levels, procedures, regulations, and legal authority, as outlined in the proposed rulemaking. The TNRCC may use methods such as remote sensing to develop both baseline numbers and as a later measurement of the program's effectiveness.

(3) Reformulated Gasoline, Lower Reid Vapor
Pressure, and Clean Alternative Fuels

Representatives of local government and the Chevron refinery in El Paso approached TNRCC about the possibility of lowering RVP in summer gasoline instead of using RFG to minimize the cost of

refinery modifications resulting in lower cost at the pump for consumers. Chevron submitted results from the EPA complex model for predicting fuel effects. The results show VOC reductions that are substantially equivalent to those from the use of reformulated fuel when RVP is lowered to 7.0 pounds per square inch (psi).

Due to the substantially equivalent reductions obtainable from low-RVP gasoline and the overwhelming support of the low-RVP program by local government and industry, TNRCC will implement a low-RVP gasoline program in El Paso. RVP gasoline has benefits for both on-road and non-road mobile sources. Additionally, it will be possible to sell the RVP gasoline in Ciudad Juarez, obtaining more widespread benefits for the air basin.

Current estimates indicate RVP gasoline resulting in a one cent per gallon increase at the pump as opposed to a predicted four to ten cents per gallon increase for RFG.

3) Demonstration of Attainment

The El Paso nonattainment area will be required to demonstrate attainment of the NAAQS by November 15, 1999. Demonstration of attainment will be based on monitoring data from 1996, 1997, and

1998. If necessary, a UAM computer modeling demonstration of attainment will be allowed using U.S. emissions data alone.

4) Contingency Plan

The El Paso nonattainment area will be required to develop a contingency plan. This plan would provide for the implementation of an additional 3.0% emission reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x, should the area fail to make any of its milestone demonstrations. 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 contingency measures would have to be implemented without any further rulemaking activity. For a general discussion of contingency plans, see §VI.B.7.a.4)d)(2). For a general discussion of control measures, see §VI.B.7.a.4)b)(1)(c)(i), (ii), and (iii). The estimated emissions reductions available for each potential contingency measure in the El Paso nonattainment area can be found in Table 20.

d. Beaumont/Port Arthur Ozone Control Strategy

1) General

a) Air Quality Analysis--Why These Reductions
Are Needed

The 1990 Amendments to the FCAA classified the Beaumont/Port Arthur area as a serious nonattainment area. The Beaumont/Port Arthur nonattainment area includes Hardin, Jefferson, and Orange Counties. The Beaumont/Port Arthur nonattainment area has an ozone design value of 0.16 ppm, which places the area in the serious classification. Currently, ozone air quality trends appear to be improving slowly. However, it is vital that further progress be made.

2) Estimated Emission Reductions

The current level of ROP Base Year VOC emissions for the Beaumont/Port Arthur nonattainment area is 331.16 TPD. Table 21 summarizes the breakdown of emissions in the Beaumont/Port Arthur area by emission categories.

TABLE 21

Anthropogenic Emissions in the
Beaumont/Port Arthur Area

CATEGORY	AMOUNT IN TPD	PERCENTAGE
Point	244.37	74
Area	34.18	10
Non-Road Mobile	32.47	10
On-Road Mobile	20.14	6

a) 15% Targeted Reductions

The 1990 FCAA Amendments specified several mandatory control measures for the Beaumont/Port Arthur nonattainment area. The most important of these was the reduction of VOC by a minimum of 15% below the level calculated in the 1990 emissions inventory. This 15% must be net of growth, and several pre-1990 federal controls may not be included as reduction credits. The 15% reduction must be achieved by November 15, 1996. Controls to achieve a further 3.0% reduction without any further rulemaking must be held in reserve as contingency measures should the state fail to make any one of its milestones. In addition to the 15% reduction, further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years must be achieved until attainment is demonstrated as part of the attainment demonstration due November 15, 1994. Attainment of the NAAQS for ozone in the Beaumont/Port Arthur area is discussed in §VI.B.7.d.3) of this document.

The following §§VI.B.7.d.2)b) and c) will detail the regulations and controls developed to enable Beaumont/Port Arthur to achieve the 15% required reduction.

b) Stationary and Area Source Controls Toward
15% Reduction

Stationary or point sources in the Beaumont/Port Arthur nonattainment area account for 74% of the total anthropogenic emissions, the overwhelming majority of emissions. Area sources account for a further 10%. There are several federally mandated programs that will be creditable towards the 1993 ROP SIP, but additional measures will be needed in order for the Beaumont/Port Arthur area to meet its goal.

(1) Emissions Reductions from RACT Catch-Ups
and Leveling the Playing Field

The Beaumont/Port Arthur nonattainment area will receive creditable reductions from RACT catch-ups and leveling the playing field. Table 22 identifies reductions due to RACT catch-ups and improvements for both point and area sources. Reductions for leveling the playing field are included under RACT catch-ups. For an explanation of the formulas used to calculate the figures in these spreadsheets, see Appendix I. For an explanation of the catch-up rules themselves, see Appendix D.

POINT SOURCES

BEAUMONT -Reductions Due to RACT Catch-ups

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up	RE	New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96	Reduction 1990 (TPD)	Reduction 90-96 (TPD)	
A Cans	0.00	0.00	0.00	0.0%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.000	0.000
B Metal Coils	0.00	0.00	0.00	0.0%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
C Paper Products	0.00	0.00	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
D Fabrics	0.00	0.00	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
E Auto New-misc. metal	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
F Metal Furniture	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H Appliances	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
I Gasoline Plants-Hardin	0.03	0.03	0.03	0.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.004	0.026
J Storage Tanks-Fixed-Hardin	0.15	0.14	0.04	0.0%	61.9%	80.0%	85.0%	90.0%	95.0%	0.050	0.006	0.085
K Pet.Ref.:Vacuum Producing Sys.	0.00	0.00	0.00	0.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
K VOC/Water Separators-Hardin	0.00	0.00	0.00	0.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K Process Unit Turnarounds-Hrdln	0.00	0.00	0.00	0.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
M Gasoline Terminals-Jefferson,Orange	8.37	24.87	2.93	86.6%	93.3%	87.5%	90.0%	91.5%	94.0%	5.310	2.580	16.981
M Gasoline Terminals-Hardin	0.06	0.22	0.00	0.0%	93.3%	87.5%	90.0%	0.0%	0.0%	0.180	0.005	0.035
O Surface Cleaning	0.03	0.03	0.00	0.0%	55.7%	70.0%	75.0%	90.0%	95.0%	0.012	0.001	0.017
P Surface Coating Misc.Metals	0.01	0.02	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.008	0.001	0.012
S Petroleum Refinery Equip-Hardin	0.34	0.31	0.31	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.310
T Roof Tanks-Ext.Float-Hardin	0.00	0.00	0.00	0.0%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	0.000	0.000
Z Resins-Polyethylene	6.49	7.39	2.53	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	3.810	0.980	2.599
Z Polypropylene	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
Z Polystyrene	0.00	0.00	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
AA Natural Gas Processing Plants	0.57	0.51	0.06	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.321	0.000	0.189
AB SOCFI	10.19	10.55	4.92	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	4.011	0.000	6.539
AC Air Oxidation SOCFI	4.79	4.82	0.00	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	3.779	0.236	0.805
TOTALS										17.479	3.812	27.598

117

BEAUMONT RE Improvement only-Jefferson,Orange

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up Reduction 1990 (TPD)	RE Reduction 90-96 (TPD)	New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96			
A	0.00	0.00	0.00	55.2%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.000	0.000
B	0.00	0.00	0.00	55.9%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
C	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
D	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
E	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
F	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
I	2.06	3.39	0.01	77.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.340	3.050
J	1.62	1.66	0.19	61.9%	61.9%	80.0%	85.0%	90.0%	95.0%	0.000	0.103	1.557
K	0.96	0.77	0.01	100.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.195	0.575
K	0.00	0.00	0.00	95.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K	0.00	0.00	0.00	98.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
O	0.00	0.00	0.00	55.7%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
P	0.39	0.41	0.23	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.021	0.389
S	17.50	18.15	3.61	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	18.150
T	14.05	38.61	10.61	61.9%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	1.071	37.539
TOTALS										0.000	1.730	61.260

(2) Stage II Vapor Recovery

Stage II Vapor Recovery will be implemented in the Beaumont/Port Arthur nonattainment area. This program will control gasoline vapors escaping during the refueling of motor vehicles. An explanation of the Stage II program can be found in §VI.B.7.a.4)b)(1)(d) of this plan. The estimated reduction in VOC emissions in the Beaumont/Port Arthur area is identified in Table 23.

(3) New Control Measures to be Implemented

The CMC in Appendix E includes a listing of control measures designed specifically for the Beaumont/Port Arthur nonattainment area ranked in priority order based on a variety of criteria. Most, if not all, of the measures will need to be implemented in the area to achieve a 15% net of growth and the 3.0% contingency emission reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x emissions, by the 1996 milestone. 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.

Proposed rules will be included in the General Rules and Regulations IV and V (30 TAC Chapters 101, 114, and 115). The explanation of and formula for creating the CMC is located in Appendix E.

Table 23 identifies the estimated reductions toward the 1993 ROP goal that are available for each control measure, both mandated and optional. This information, combined with the CMC, has been used to formulate a ranking of the most effective and cost efficient rules for a particular nonattainment area. This table is intended to identify options available to the state and is not intended to specify reduction targets for each category.

c) Mobile Source Controls

(1) Vehicle I/M Program

The Beaumont/Port Arthur nonattainment area is defined by Orange and Jefferson Counties. A test-only, managing contractor-operated, basic I/M program will be conducted. After extensive acceptance testing from April 1, 1994 to June 30, 1994, the program is currently scheduled to begin limited testing of fleet

TABLE 23

ESTIMATES TOWARDS ROP SIP - BEAUMONT/PORT ARTHUR

EMISSIONS INVENTORY	1990	Percent	Growth	1996	Percent
Area Sources	34.18	10.3%	0.6%	34.37	10.6%
Point Sources	244.37	73.8%	-3.8%	235.00	72.3%
On-road Mobile Sources	20.14	6.1%	14.2%	22.99	7.1%
Off-road Mobile Sources	32.47	9.8%	0.2%	32.53	10.0%
TOTALS	331.16		-1.9%	324.89	

ESTIMATED REDUCTIONS

MANDATED RULES	96 Projected TPD	Reduction TPD	% of Required	Cumulative %
Catchups	30.46	18.84	39.5%	39.5%
Benzene NESHAPS	0.30	0.28	0.6%	40.1%
TSDF	0.04	0.04	0.1%	40.2%
Vehicle Refueling (Stage II)	2.39	1.94	4.1%	44.3%
FMVCP Tier I	22.99	0.22	0.5%	44.7%
Basic I/M	22.99	3.16	6.6%	51.4%
SUBTOTAL		24.48	51.4%	

PHASE I RULES

Vessel Cleaning	0.02	0.02	0.0%	51.4%
Fugitives	25.19	15.61	32.7%	84.1%
RE Improvements	91.63	5.98	12.5%	96.7%
Gas Utility Engines	10.52	1.05	2.2%	98.9%
SUBTOTAL		22.66	47.5%	

PHASE II RULES and *CONTINGENCY RULES

Architectural Coatings	2.93	0.80	1.7%	100.5%
Consumer/Comm Products	3.09	0.33	0.7%	101.2%
*I/M & FMVCP 1997	23.32	0.66	1.4%	102.6%
*Utility Engines 1997	10.53	1.05	2.2%	104.8%
*Auto Refinishing	1.69	0.68	1.4%	106.2%
SUBTOTAL		3.52	7.4%	

Target Improvement	47.68	100.0%	14.4%
Phase I/II/Mandated Rules	48.27	101.2%	
Excess (Shortfall)	0.59	1.2%	
Required Contingency	9.93		3.0%
Target+Contingency	57.61	100.0%	17.4%
Total Reductions ID'd	50.66	106.2%	
Excess (Shortfall)	-6.96	6.2%	

4/26/94

vehicles on July 1, 1994 with full implementation by January 1, 1995.

All 1968 and newer model year light-duty vehicles and light-duty trucks will be subject to a two-speed (loaded-mode) and pressure test and a visual two-point antitampering check (catalytic converter and inlet restrictor). Exhaust gas testing for HC, CO, and CO₂ is required.

All heavy-duty trucks will be subject to a preconditioned two-speed idle and pressure test and a visual two-point antitampering check (if factory equipped with catalytic converter and inlet restrictor). Exhaust gas testing for HC, CO, and CO₂ is required.

Dedicated four-wheel drive vehicles, meaning any constant four-wheel drive vehicle which cannot be converted to two-wheel drive, except by removing one of the vehicle's drive shafts, shall be subject to a preconditioned two-speed idle test.

The TNRCC will monitor and evaluate the Beaumont/Port Arthur program by analysis of information provided regarding program activities performed and their final outcomes, including summary statistics and effectiveness evaluations of the enforcement mechanism, the quality assurance system, the quality control program, and the testing element.

(2) Reformulated Gasoline and Clean
Alternative Fuels

RFG is not now being considered in the Beaumont/Port Arthur nonattainment area, although RFG has air quality benefits for both on-road and non-road gasoline engines. Mobile source emissions are only a small portion of the Beaumont/Port Arthur area and the required reductions can be met without the need for RFG.

The use of clean alternative fuels such as natural gas, propane, and alcohol may have some application by 1996 and some mandated use by 1998. The TNRCC continues to work with local planning organizations to determine the number of clean alternative fuels vehicles.

3) Demonstration of Attainment

The Beaumont/Port Arthur nonattainment area will be required to demonstrate attainment of the NAAQS on November 15, 1999. Demonstration of attainment will be based on monitoring data from 1996, 1997, and 1998.

4) Contingency Plan

The Beaumont/Port Arthur nonattainment area will be required to develop a contingency plan. This plan would provide for the implementation of an additional 3.0% emission reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x, should the area fail to make any of its milestone demonstrations.

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 contingency measures would have to be implemented without any further rulemaking activity. For a discussion of contingency plans, see §VI.B.7.a.4)d) (2). For a general discussion of control measures, see §VI.B.7.a.4)b) (1) (c) (i), (ii), and (iii). The estimated emissions reductions available for each potential contingency measure in the Beaumont/Port Arthur nonattainment area can be found in Table 23.

e. Houston/Galveston Ozone Control Strategy

1) General

a) Air Quality Analysis--Why These Reductions
Are Needed

The 1990 Amendments to the FCAA classified the Houston/Galveston area as a severe II nonattainment area. The Houston/Galveston nonattainment area includes the counties of Brazoria, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller, and Chambers. The Houston/Galveston nonattainment area has an ozone design value of 0.22 ppm, which places the area in the Severe II classification. Currently, ozone air quality remains substantially above the standard in the Houston/Galveston nonattainment area. Therefore, it is vital that further progress be made.

2) Estimated Emission Reductions

The current level of ROP Base Year VOC emissions for the Houston/Galveston nonattainment area is 1,090.94 TPD. Table 24 summarizes the breakdown of emissions in the Houston/Galveston area by emission categories.

TABLE 24

Anthropogenic Emissions in the
Houston/Galveston Area

CATEGORY	AMOUNT IN TPD	PERCENTAGE
Point	484.45	44
Area	242.96	22
Non-Road Mobile	200.14	18
On-Road Mobile	163.39	15

a) 15% Targeted Reductions

The 1990 FCAA Amendments specified several mandatory control measures for the Houston/Galveston nonattainment area. The most important of these was the reduction of VOC by a minimum of 15% below the level calculated in the 1990 emissions inventory. This 15% must be net of growth, and several pre-1990 federal controls may not be included as reduction credits. The 15% reduction must be achieved by November 15, 1996. Controls to achieve a further 3.0% reduction without any further rulemaking must be held in reserve as contingency measures should the state fail to make any one of its milestones. In addition to the 15% reduction, further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years must be achieved until attainment is demonstrated as part of the attainment demonstration due November 15, 1994. Attainment of the NAAQS for ozone in the Houston/Galveston area is discussed in §VI.B.7.e.3) of this document.

The following §§VI.B.7.e.2)b) and c) will detail the regulations and controls developed to enable the Houston/Galveston area to achieve the 15% required reduction.

b) Stationary and Area Source Controls Toward
15% Reduction

Stationary or point sources in the Houston/Galveston nonattainment area account for 44% of the total anthropogenic emissions. Area sources account for 23%. There are several federally mandated programs that will be creditable towards the 1993 ROP SIP, but additional measures will be needed in order for the Houston/Galveston area to meet its goal.

(1) Emissions Reductions from RACT Catch-Ups
and Leveling the Playing Field

The Houston/Galveston nonattainment area will receive creditable reductions from RACT catch-ups and leveling the playing field. Table 25 identifies reductions due to RACT catch-ups and rule effectiveness improvements for both point and area sources. Reductions for leveling the playing field are included under RACT catch-ups. For an explanation of the formulas used to calculate reductions, see Appendix I. For an explanation of the catch-up rules, see Appendix D.

POINT SOURCES

HOUSTON --Reductions Due to RACT Catch-ups

Group Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up RE Reduction Reduction		New1996 (TPD)
						RE-90	RE-96	RE-90	RE-96	1990 (TPD)	90-96 (TPD)	
A Cans	1.93	1.93	1.93	0.0%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.068	1.862
B Metal Coils	0.04	0.06	0.06	0.0%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.003	0.057
C Paper Products	0.00	0.00	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
D Fabrics	0.00	0.00	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
E Auto New-misc. metal	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
F Metal Furniture	0.00	0.00	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H Appliances	0.16	0.16	0.08	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.031	0.007	0.122
I Gasoline Plants	0.45	0.49	0.47	0.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.012	0.060	0.418
J Storage Tanks-Fixed	1.42	1.46	0.16	0.0%	61.9%	80.0%	85.0%	90.0%	95.0%	0.644	0.051	0.765
K Pet.Ref.:Vacuum Producing Sys.	0.00	0.00	0.00	0.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.000	0.000
K VOC/Water Separators	0.00	0.00	0.00	0.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K Process Unit Turnarounds	0.00	0.00	0.00	0.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.000
M Gasoline Terminals-Chambers,Ft.Bend	0.08	0.23	0.00	0.0%	93.3%	87.5%	90.0%	91.5%	94.0%	0.188	0.005	0.037
M Gasoline Terminals-Gal.,Brazoria	0.88	2.77	0.02	86.6%	93.3%	87.5%	90.0%	91.5%	94.0%	0.666	0.268	1.837
M Gasoline Terminals-Harris	0.31	0.20	0.12	0.0%	93.3%	87.5%	90.0%	91.5%	94.0%	0.065	0.021	0.114
O Surface Cleaning	0.00	0.00	0.00	0.0%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
P Surface Coating Misc.Metals	0.19	0.23	0.00	0.0%	55.6%	70.0%	75.0%	90.0%	95.0%	0.090	0.006	0.134
Q Factory Fin. Wood	0.11	0.14	0.00	0.0%	55.6%	80.0%	85.0%	85.0%	90.0%	0.062	0.004	0.074
R Graphic Arts	0.00	0.00	0.00	0.0%	75.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.000	0.000
S Petroleum Refinery Equip	3.42	3.39	0.54	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	2.031	0.000	1.359
T Roof Tanks-Ext.FloatExt.Float	0.36	0.58	0.32	0.0%	61.9%	88.0%	90.0%	93.0%	95.0%	0.142	0.013	0.426
Z Resins-Polyethylene	2.30	3.28	0.53	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	2.156	0.290	0.834
Z Polypropylene	0.63	0.74	0.74	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.217	0.523
Z Polystyrene	0.09	0.11	0.11	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.032	0.078
AA Natural Gas Processing Plants	21.79	19.61	4.49	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	10.773	0.000	8.837
AB SOCOMI	8.55	8.84	5.55	0.0%	75.0%	95.0%	95.0%	98.0%	98.0%	2.344	0.000	6.496
AC Air Oxidation SOCOMI	0.10	0.10	0.08	0.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.016	0.024	0.060
TOTALS										19.219	1.070	24.031

129

HOUSTON RE Improvement only

Group	Category	EI 1990 (TPD)	EI 1996 (TPD)	Permits	CE-90	CE-96	Non-Permitted		Permitted		Catch-up	RE	New1996 (TPD)
							RE-90	RE-96	RE-90	RE-96	Reduction 1990 (TPD)	Reduction 90-96 (TPD)	
A	Cans	0.85	0.85	0.18	55.2%	55.2%	96.0%	99.0%	96.0%	99.0%	0.000	0.030	0.820
B	Metal Coils	0.24	0.29	0.00	55.9%	55.9%	70.0%	75.0%	90.0%	95.0%	0.000	0.013	0.277
C	Paper Products	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
D	Fabrics	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
E	Auto New-misc. metal	0.14	0.14	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.006	0.134
F	Metal Furniture	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
H	Appliances	0.00	0.00	0.00	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.000	0.000
I	Gasoline Plants	2.70	5.28	0.02	77.0%	77.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.530	4.750
J	Storage Tanks-Fixed	9.25	12.09	2.59	61.9%	61.9%	80.0%	85.0%	90.0%	95.0%	0.000	0.763	11.327
K	Pet.Ref.;Vacuum Producing Sys.	3.20	3.39	0.02	100.0%	100.0%	80.0%	85.0%	90.0%	95.0%	0.000	0.852	2.538
K	VOC/Water Separators	0.00	0.00	0.00	95.0%	95.0%	60.0%	65.0%	85.0%	90.0%	0.000	0.000	0.000
K	Process Unit Turnarounds	0.02	0.03	0.03	98.0%	98.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.030
M	Gasoline Terminals	0.00	0.00	0.00	93.3%	93.3%	87.5%	90.0%	91.5%	94.0%	0.000	0.000	0.000
O	Surface Cleaning	0.64	0.67	0.01	55.7%	55.7%	70.0%	75.0%	90.0%	95.0%	0.000	0.031	0.639
P	Surface Coating Misc.Metals	0.93	1.13	0.09	55.6%	55.6%	70.0%	75.0%	90.0%	95.0%	0.000	0.052	1.078
Q	Factory Fin. Wood	0.00	0.00	0.00	55.6%	55.6%	80.0%	85.0%	85.0%	90.0%	0.000	0.000	0.000
R	Graphic Arts	0.17	0.30	0.25	60.0%	60.0%	70.0%	75.0%	85.0%	90.0%	0.000	0.018	0.282
S	Petroleum Refinery Equip	23.45	24.09	5.61	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	24.090
T	Roof Tanks-Ext.Float	18.18	50.13	17.08	61.9%	61.9%	88.0%	90.0%	93.0%	95.0%	0.000	1.397	48.733
Z	Resins-Polyethylene	3.43	4.04	0.77	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.968	3.072
Z	Polypropylene	0.86	1.21	0.92	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.336	0.874
Z	Polystyrene	0.20	0.31	0.03	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.072	0.238
AA	Natural Gas Processing Plants	0.47	0.43	0.01	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	0.430
AB	SOCMI	14.01	14.36	5.80	75.0%	75.0%	95.0%	95.0%	98.0%	98.0%	0.000	0.000	14.360
AC	Air Oxidation SOCMI	0.61	1.26	0.48	98.0%	98.0%	80.0%	85.0%	85.0%	90.0%	0.000	0.318	0.942
TOTALS											0.000	5.387	114.613

AREA SOURCES

HOUSTON

-Reductions Due to RACT Catch-ups

Group Category	Growth Factor	AREA SOURCES							
		EI 1990 (TPD)	CE-90	CE-96	RE-90	RE-96	RP-90	RP-96	CR 90-96
A	1.0832	2.2879	55.2%	55.2%	96.0%	99.0%	0.0%	75.0%	1.016
B	1.0832	0.0000	55.9%	55.9%	70.0%	75.0%	0.0%	75.0%	0.000
E	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.000
H	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.000
L	1.0002	0.2586	65.0%	65.0%	80.0%	85.0%	0.0%	80.0%	0.114
N	1.2016	5.1154	95.0%	95.0%	80.0%	85.0%	0.0%	95.0%	4.715
O	1.0832	5.2385	55.7%	55.7%	70.0%	75.0%	0.0%	100.0%	2.370
P	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.000
P	1.0832	0.0563	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.019
P	1.0832	0.0290	55.6%	55.6%	70.0%	75.0%	0.0%	75.0%	0.010
Q	1.1058	0.0944	55.6%	55.6%	80.0%	85.0%	0.0%	75.0%	0.037
V	1.0002	0.4643	95.0%	95.0%	80.0%	85.0%	0.0%	100.0%	0.375
TOTALS			13.5444						8.657

RE Improvement only

Group Category		Growth Factor	EI 1990 (TPD)	CE-90	CE-96	RE-90	RE-96	RP-90	RP-96	CR 90-96
A	Metal Containers-Harris	1.0832	4.4282	55.2%	55.2%	96.0%	99.0%	75.0%	75.0%	0.099
B	Sheet Strip Coil-Harris	1.0832	5.5757	55.9%	55.9%	70.0%	75.0%	75.0%	75.0%	0.179
L	Cutback Asphalt-Harris,Gal,Brazoria	1.0002	0.2482	65.0%	65.0%	80.0%	85.0%	80.0%	80.0%	0.011
N	Tank Truck Unloading-Harris,Gal,Braz	1.2016	7.1111	95.0%	95.0%	80.0%	85.0%	95.0%	95.0%	1.387
O	Surface Cleaning-Harris	1.0832	11.1954	55.7%	55.7%	70.0%	75.0%	100.0%	100.0%	0.554
P	Electrical Insulation-Harris	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.000
P	Other Trans Equip-Harris	1.0832	0.0000	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.000
P	Machinery/Equip-Harris	1.0832	1.5408	55.6%	55.6%	70.0%	75.0%	75.0%	75.0%	0.049
Q	Factory Fin. Wood-Harris	1.1058	1.0709	55.6%	55.6%	80.0%	85.0%	75.0%	75.0%	0.037
V	Tank Trucks in Transit-Harris,Gal,Braz	1.0002	0.0874	95.0%	95.0%	80.0%	85.0%	100.0%	100.0%	0.017
TOTALS			31.2577							2.333

(2) Stage II Vapor Recovery

Stage II Vapor Recovery will be implemented in the Houston/Galveston nonattainment area. This program will control gasoline vapors escaping during the refueling of motor vehicles. An explanation of the Stage II program can be found in §VI.B.7.a.4)b)(1)(d) of this plan. The estimated reduction in VOC emissions in the Houston/Galveston area is identified in Table 26.

(3) New Control Measures to be Implemented

The CMC in Appendix E includes a listing of control measures specifically for the Houston/Galveston nonattainment area ranked in priority order based on a variety of criteria. Most, if not all, of the measures will need to be implemented in the area to achieve a 15% net of growth and the 3.0% contingency reduction in emissions of VOC or NO_x by the 1996 milestone.

Proposed rules will be included in the General Rules and Regulations IV and V (30 TAC Chapters 101, 114, and 115). The explanation of and formula for creating the CMC is located in Appendix E.

Table 26 shows the estimated reductions toward the 1993 ROP goal that are available for each control measure, both mandated and

optional. This information, combined with the CMC, can be used to formulate a ranking of the most effective and cost efficient rules for a particular nonattainment area.

ESTIMATES TOWARDS ROP SIP - HOUSTON/GALVESTON

EMISSIONS INVENTORY	1990	Percent	Growth	1996	Percent
Area Sources	242.96	22.3%	6.4%	258.57	22.5%
Point Sources	484.45	44.4%	-0.3%	482.98	42.1%
On-road Mobile Sources	163.39	15.0%	16.5%	190.37	16.6%
Off-road Mobile Sources	200.14	18.3%	7.8%	215.79	18.8%
TOTALS	1090.94		5.2%	1147.71	

ESTIMATED REDUCTIONS

MANDATED RULES	96 Projected TPD	Reduction TP	% of Required	Cumulative %
Catchups	37.57	27.09	11.7%	11.7%
TSDf	0.86	0.80	0.3%	12.0%
Vehicle Refueling (Stage II)	20.80	16.89	7.3%	19.3%
Other VOC Storage	0.64	0.46	0.2%	19.5%
Enhanced I/M	190.37	34.49	14.9%	34.3%
Reform Gas (on-road)	362.26	19.33	8.3%	42.7%
Reform Gas (off-road)	185.30	6.53	2.8%	45.5%
FMVCP Tier I	190.37	1.49	0.6%	46.1%
Employer trip reduction	190.37	1.81	0.8%	46.9%
SUBTOTAL		108.89	46.9%	

PHASE I RULES

Auto Refinishing	17.88	7.15	3.1%	50.0%
Vessel Cleaning	3.77	2.74	1.2%	51.1%
SOCMI Reactor/Distillation	14.99	5.55	2.4%	53.5%
Fugitives	55.57	34.61	14.9%	68.4%
RE Improvements	169.90	8.56	3.7%	72.1%
Gas Utility Engines	90.74	9.08	3.9%	76.0%
TCMs	190.37	0.10	0.0%	76.1%
SUBTOTAL		67.79	29.2%	

PHASE II RULES and *CONTINGENCY RULES

Acetone replacement	4.34	1.43	0.6%	76.7%
Architectural Coatings	36.57	9.14	3.9%	80.6%
Consumer/Comm Products	35.87	3.85	1.7%	82.3%
Major Source Bakeries	0.79	0.23	0.1%	82.4%
Industrial Wastewater	18.42	13.36	5.8%	88.1%
Marine Vessel Loading	35.78	27.37	11.8%	99.9%
Gasoline Terminals	3.20	0.81	0.3%	100.3%
Wood Furniture	2.90	0.37	0.2%	100.4%
*Municipal Landfills	7.27	3.99	1.7%	102.1%
*Dry Cleaning-Naphtha	3.72	1.77	0.8%	102.9%
*Offset Printing	5.02	2.21	1.0%	103.9%
*I/M & FMVCP 1997	190.37	7.80	3.4%	107.2%
*Utility Engines 1997	90.74	9.20	4.0%	111.2%

SUBTOTAL	81.53	35.1%	
Target Improvement	232.24	100.0%	21.3%
Phase I/II/Mandated Rules	233.24	100.4%	
Excess (Shortfall)	1.00	0.4%	
Required Contingency	32.73		3.0%
Target+Contingency	264.97	100.0%	24.3%
Total Reductions ID'd	258.21	97.4%	
Excess (Shortfall)	-6.76	-2.6%	

4/19/94

c) Mobile Source Controls

(1) Transportation Control Measures

A TCM program is mandated for the Houston/Galveston nonattainment area. Several measures are being considered for implementation in the area. These measures include: land use densification, mixed land use development, pedestrian improvements, traffic signal timing improvements, college traffic management, K-12 school traffic management, employee transit pass subsidy, non-metro service area transit, fixed commuter rail, bicycle improvements, trip reduction ordinances, ridesharing, parking management, telecommuting, flexible work hours, compressed work week, gasoline tax, cost increase, emission pricing, roadway pricing, motorist information system, incident management and response, special events management, control of truck movements. Measures scheduled to be implemented include: high occupancy vehicle lanes, arterial traffic flow improvements, park-and-ride lots, transit improvements, area-wide rideshare, and intelligent vehicle highway systems. A full description of the TCMS is included in Appendix K. The Houston-Galveston Area Council has specifically committed to those measures identified in Appendix K.

(2) Employer Trip Reduction

An ETR program is proposed for the Houston/Galveston nonattainment area. This mandatory program is designed to encourage ridership in carpools, vanpools, and public transit. By increasing vehicle ridership by 25% among employers of more than 100 employees, this program could reduce VOC emissions by three TPD.

(3) Vehicle Inspection/Maintenance Program

After extensive acceptance testing from July 1, 1994 to December 31, 1994, the program will begin full testing on January 1, 1995. The TNRCC may initiate testing with less stringent cutpoints in 1995 than will be required in 1998. All 1968 to 1989 model year light-duty vehicles and light-duty trucks will be subjected to a two-speed (loaded mode) and pressure test and a visual two-point antitampering check. Exhaust gas testing for HC, CO, and CO₂ is required.

All 1984 and newer model year light-duty vehicles and light-duty trucks will be subject to IM240, pressure and purge testing, and a visual two-point antitampering check. Exhaust gas testing for HC, CO, CO₂ and NO_x is required.

All heavy-duty trucks will be subject to a preconditioned two-speed idle and pressure test and a visual two-point

antitampering check (if factory equipped with catalytic convertor and inlet restrictor). Exhaust gas testing for HC, CO, and CO₂ is required.

Dedicated four-wheel drive vehicles, meaning constant four-wheel drive vehicle which cannot be converted to two-wheel drive, except by removing one of the vehicle's drive shafts, shall be subject to a preconditioned two-speed idle test.

The pass/fail determination for the emissions test is made based on a comparison of the HC, CO, and NO_x readings to emission standards selected for that particular vehicle.

(4) Reformulated Gasoline and Clean Alternative Fuels

Beginning on January 1, 1995, reformulated gasoline will be used in the Houston/Galveston nonattainment area. This type of fuel has significant air quality benefits for both on-road and non-road gasoline engines.

The use of clean alternative fuels such as natural gas, propane, and alcohol may have some application by 1996 and some mandated use by 1998. The TNRCC will continue to work with local planning organizations to determine the number of alternative fuel vehicles and to estimate the resulting air quality benefits.

3) Demonstration of Attainment

The Houston/Galveston nonattainment area will be required to demonstrate attainment of the NAAQS on November 15, 2007. Demonstration of attainment will be based on monitoring data from 2004, 2005, and 2006.

4) Contingency Plan

The Houston/Galveston nonattainment area will be required to develop a contingency plan. This plan would provide for the implementation of an additional 3.0% emission reduction of either NO_x or VOC, of which up to 2.7% may be reductions in NO_x, should the area fail to make any of its milestone demonstrations. 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 contingency measures would have to be implemented without any further rulemaking activity. For a discussion of contingency plans, see SVI.B.7.a.4)d)(2). The estimated emissions reductions available for each potential

contingency measure in the Houston/Galveston nonattainment area can be found in Table 26.

8. SOCIAL AND ECONOMIC CONSIDERATIONS OF THE PLAN

a.-f. (No change.)

g. Evaluation of the 1993 ROP SIP Revisions (New.)

Extensive efforts were made to analyze the social and economic impacts of controls before they were proposed in this SIP revision. Cost per ton of VOC reduced is the most heavily weighted factor in the CMC ranking of control measures. In addition, the preambles published with each new rule revision to TNRCC Chapter 115 describe the economic impacts of the proposed controls.

9. FISCAL AND MANPOWER RESOURCES

Table 27 details the projected growth of the TNRCC's Office of Air Quality budget and staffing requirements from 1994 to 1998.

Table 27
Growth Estimates for the TNRCC Office of Air Quality

ORGANIZATIONAL PROGRAM	1994 STAFF	1994 DOLLARS	1996 STAFF	1996 DOLLARS	1998 STAFF	1998 DOLLARS
Field Operations	225	\$ 9,533,846	332	\$12,728,216	376	\$14,415,088
Enforcement	75	2,176,838	97	3,326,906	111	3,807,078
Permits	189	10,227,614	361	15,251,528	409	17,279,432
Small Bus. Assistance	19	952,154	23	1,008,642	27	1,184,058
Technical Operations	135	16,023,166	148	14,690,036	168	16,675,176
Air Quality Planning ²	192	10,459,839	221	8,883,095	251	10,088,945
Small Bus. Ombudsman	9	455,865	10	4,790,000	12	5,748,000
Marketable Permits	6	341,656	6	339,288	7	3,958,836
Pollution Prevention	4	159,328	7	223,937	9	287,919
Administration	227	17,186,008	277	18,708,026	315	21,274,470
TOTAL STAFF	1081		1482		1685	
TOTAL DOLLARS		\$68,056,314		\$79,949,674		\$94,719,002
EST. EMPLOYEE BENEFITS		\$10,000,000		\$14,000,000		\$14,000,000
TOTAL INCLU. EMPLOYEE BENEFITS		\$78,056,414		\$93,949,674		\$108,719,002

(Estimated December 92 for a November 93 submittal)

10. HEARING REQUIREMENTS

a.-e. (No change.)

f. Public Hearings for 15% ROP SIP Revisions (New.)

Table 28 lists the public hearings that were conducted in each of the four nonattainment areas regarding the 15% ROP Phase I SIP. Additional hearings were conducted regarding the Phase II rules and SIP. These hearings are listed in Table 29.

TABLE 28

Public Hearings for the Phase I Rate-of-Progress SIP

NONATTAINMENT AREA	DATE	TIME	LOCATION
Houston/ Galveston	Monday August 23, 1993	5:30 p.m.	Houston-Galveston Area Council
Beaumont/ Port Arthur	Tuesday August 24, 1993	10:30 a.m.	Beaumont John Gray Inst.
El Paso	Wednesday August 25, 1993	5:30 p.m.	City of El Paso Council Chambers
Dallas/ Fort Worth	Thursday August 26, 1993	1:00 p.m.	Irving Central Library

TABLE 29

Public Hearings for the Phase II Rate-of-Progress SIP

NONATTAINMENT AREA	DATE	TIME	LOCATION
Houston/ Galveston	Monday Jan 24, 1994	7:00 p.m.	City of Houston Pollution Control
El Paso	Wednesday Jan 26, 1994	6:00 p.m.	City of El Paso Council Chambers
Dallas/ Fort Worth	Thursday Jan 27, 1994	7:00 p.m.	Irving Central Library