

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

ATTAINMENT DEMONSTRATION FOR THE
BEAUMONT/PORT ARTHUR
OZONE NONATTAINMENT AREA

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
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TABLE OF CONTENTS

SECTION VI: CONTROL STRATEGY

- A. INTRODUCTION (Revised.)
- B. OZONE CONTROL STRATEGY (Revised.)
 - 1. POLICY AND PURPOSE (Revised.)
 - a. Primary Purpose of Plan (Revised.)
 - 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 (Revised.)
 - a. Definition of Attainment and Nonattainment Areas (No change.)
 - b. Responsibilities for Plan Development (No change.)
 - c. Establishing Baseline Air Quality (No change.)
 - d. Required Emission Reductions (Revised.)
 - e. Sources of Emission Reductions (Revised.)
 - 3. OZONE CONTROL PLAN FOR 1979 SIP REVISION (No change.)
 - a. General (No change.)
 - b. Ozone Nonattainment Area Designations in Texas (No change.)
 - c. Planning Procedures and Consultation (No change.)
 - d. Degree of Nonattainment - Selection of Air Quality Baseline (No change.)
 - e. Relationship Between Air Quality Baseline (Design Value) and Emission Reductions Required to Attain Ambient Air Quality Standard (No change.)
 - f. Identification of Emission Changes (No change.)
 - 4. CONTROL STRATEGY FOR 1979 SIP REVISION (No change.)
 - a. General (No change.)
 - b. Estimated Emission Reductions (No change.)
 - c. New Source Review (No change.)
 - 5. 1982 HARRIS COUNTY SIP REVISION (No change.)
 - a. Ozone Control Plan (No change.)
 - b. Control Strategy (No change.)

CONTENTS (Continued)

6. SIP REVISIONS FOR POST-1982 URBAN NONATTAINMENT AREAS (No change.)
 - a. Ozone Control Plan (No change.)
 - b. Dallas County Ozone Control Strategy (No change.)
 - c. Tarrant County Ozone Control Strategy (No change.)
 - d. El Paso County Ozone Control Strategy (No change.)
7. SIP REVISIONS FOR 1993 RATE-OF-PROGRESS (No change.)
 - a. Ozone Control Plan (No change.)
 - b. Dallas/Fort Worth Ozone Control Strategy (No change.)
 - c. El Paso Ozone Control Strategy (No change.)
 - d. Beaumont/Port Arthur Ozone Control Strategy (No change.)
 - e. Houston/Galveston Ozone Control Strategy (No change.)
8. SIP REVISIONS FOR MOBILE SOURCES (No change.)
 - a. Vehicle Inspection/Maintenance (I/M) Program (No change.)
 - b. Vehicle Miles Traveled Offset (No change.)
 - c. Employer Trip Reduction Program (Repealed.)
9. SIP REVISIONS FOR THE ATTAINMENT DEMONSTRATION (Revised. See Chapters 1-7)
 - a. El Paso §818 Attainment Demonstration (No change.)
 - b. Dallas/Fort Worth Attainment Demonstration (No change.)
 - c. Houston/Galveston Attainment Demonstration (No change.)
 - d. Beaumont/Port Arthur Attainment Demonstration (New.)
10. SIP REVISIONS FOR THE REDESIGNATION AND MAINTENANCE PLANS (No change.)
 - a. Victoria Redesignation and Maintenance Plan (No change.)
11. SIP REVISIONS FOR THE POST-96 RATE-OF-PROGRESS (No change.)
 - a. Ozone Control Plan (No change.)
 - b. Beaumont/Port Arthur Ozone Control Strategy (Revised.)
 - c. Houston/Galveston Ozone Control Strategy (No change.)
 - d. Dallas/Fort Worth Ozone Control Strategy (No change.)
 - e. Beaumont/Port Arthur Ozone Control Strategy (New.)

CONTENTS (Continued)

12. SOCIAL AND ECONOMIC CONSIDERATIONS OF THE PLAN (Revised.)
 - a. Health Effects (No change.)
 - b. Social and Public Welfare Effects (No change.)
 - c. Economic Effects (No change.)
 - d. Effects on Energy Consumption (No change.)
 - e. Evaluation of the 1982 SIP for Harris County (No change.)
 - f. Evaluation of the Post-1982 SIP for Urban Nonattainment Areas (No change.)
 - g. Evaluation of the 1993 SIP Revisions (No change.)
 - h. Evaluation of the Houston/Galveston Attainment Demonstration (No change.)
 - i. Evaluation of the Dallas/Fort Worth Attainment Demonstration (No change.)
 - j. Evaluation of the Beaumont/Port Arthur Attainment Demonstration (New.)
13. FISCAL AND MANPOWER RESOURCES (No change.)
14. HEARING REQUIREMENTS (Revised.)
 - a. Requirements (No change.)
 - b. Notification (No change.)
 - c. Public Hearings for 1979 SIP Revisions (No change.)
 - d. Public Hearings for 1982 SIP Revisions (No change.)
 - e. Public Hearings for Post-1982 SIP Revisions (No change.)
 - f. Public Hearings for 1993 SIP Revisions (No change.)
 - g. Public Hearings for the Consolidated SIP Package (No change.)
 - h. Public Hearings for the Houston/Galveston Attainment Demonstration (No change.)
 - i. Public Hearings for the Dallas/Fort Worth Attainment Demonstration (No change.)
 - i. Public Hearings for the Beaumont/Port Arthur Attainment Demonstration (New.)

**BEAUMONT/PORT ARTHUR ATTAINMENT DEMONSTRATION
LIST OF TABLES**

TABLE #	TABLE NAME	PAGE #
2-1	2007 Motor Vehicle Emission Budgets for BPA	2-5
3-1	Point Source Emissions (tpod) per County per Control Scenario	3-8
3-2	Results of Attainment Demonstration Modeling	3-8
6.2-1	Schedule for Submitting BPA SIP and Phase I Rules	6-6
6.2-2	NO _x Reduction Estimates (including Phase I rules)	6-7
6.2-2	Schedule for Submitting BPA SIP and Phase II Rules	6-9

**BEAUMONT/PORT ARTHUR SIP REVISION FOR THE
ATTAINMENT DEMONSTRATION
LIST OF FIGURES**

FIGURE #	FIGURE NAME	PAGE #
2.7-1	1990 BPA VOC Emissions Inventory	2-8
2.7-2	1990 BPA NO _x Emissions Inventory	2-9
2.7-3	2007 BPA VOC Emissions Inventory	2-10
2.7-4	2007 BPA NO _x Emissions Inventory	2-11

**BEAUMONT/PORT ARTHUR ATTAINMENT DEMONSTRATION
LIST OF ACRONYMS**

ACT - Alternative Control Techniques
AIRS - Aerometric Information Retrieval System
AMS - Area and Mobile Source
APA - Administrative Procedure Act
AQAC - Air Quality Advisory Committee
ARACT - Alternate Reasonably Available Control Technology
ARPDB - Acid Rain Program Database
ASC - Area Source Categories
ATC - Air Traffic Control
AUTO-GC - Automated Gas Chromatograph
AVHRR - Advanced Very High Resolution Radiometer
BACT - Best Available Control Technology
BEIS-2 - Biogenic Emissions Inventory System, version2
BELD - Biogenic Emissions Land Cover Database
BIOME - Biogenic Model for Emissions
BLRID - Boiler ID
BPA - Beaumont/Port Arthur
CAM - Compliance Assurance Monitoring
CAMS - Continuous Air Monitoring Station
CAMx - Comprehensive Air Model with Extensions
CARE - Clean Air Responsibility Enterprise
CB-IV HC - Carbon Bond IV Hydrocarbon
CEMS - Continuous Emissions Monitoring System
CHMSPL - CHeMical SPLit
CNTLEM - CoNTroL Emissions
CO - Carbon Monoxide
COAST - Coastal Oxidant Assessment for Southeast Texas
CTG - Control Technique Guidelines
DFW - Dallas/Fort Worth
DFWN - Dallas/Fort Worth North
DFWRTM - Dallas/Fort Worth Regional Transportation Model
DOW - Day of Week
DRI - Desert Research Institute
EGAS - Econometric Model
EI - Emissions Inventory
EIQ - Emissions Inventory Questionnaire
ELP - El Paso
EGAS - Economic Growth Analysis System
EGU - Electric Generating Unit
EMS-5 - Emissions Modeling System, 1995
EMSCVT - EMiSsions ConVerT
EPA - U.S. Environmental Protection Agency
EPN - Emission Point Number
EPS-2 - Emission Preprocessing System, Version 2

ETR - Employer Trip Reduction
FAA - Federal Aviation Administration
FCAA - Federal Clean Air Act
FDDA - Four-Dimensional Data Assimilation
FIPS - Federal Information Placement System
FMVCP - Federal Motor Vehicle Control Program
FTP - File Transfer Protocol
GIS - Geographic Information System
GMAQS - Gulf of Mexico Air Quality Study
g/hp-hr - Grams Per Horsepower-Hour
GRDEM - GRiD Emissions
HAP - Hazardous Air Pollutant
HAXL - Houston Air Excellence in Leadership
HDD - Heavy-duty Diesel
HGA - Houston/Galveston
H-GAC - Houston-Galveston Area Council
HON - Hazardous Organics NESHAPS
HPMS - Highway Performance Monitoring System
hp - Horsepower
HRM - Houston Regional Monitoring
HYSPLIT - HYbrid Single Particle Lagrangian Integrated Trajectory
IWW - Industrial Wastewater
IIG - Interim Implementation Guidance
IIP - Interim Implementation Plan
I/M - Inspection and Maintenance
INIT - Initial Condition Tracer
ITWS - Integrated Terminal Weather System
kg/ha - Kilograms/hectare
km - Kilometer
LBASE - Link-BASEd emissions preprocessor
LDEQ - Louisiana Department of Environmental Quality
LEV - Low Emission Vehicle
LULC - Land Use Land Cover
m - Meter
MACT - Maximum Achievable Control Technology
MMS - Minerals Management Service
MRGUAM - MeRGe Urban Airshed Model ready files
NAAQS - National Ambient Air Quality Standard
NCDC - National Climatic Data Center
NLEV - National Low Emission Vehicle
NCTCOG - North Central Texas Council of Governments
NDBC - National Data Buoy Center
NEGU - Non-electric Generating Units
NESHAPS - National Emission Standards for Hazardous Air Pollutants
NET - National Emission Trends
NO_x - Nitrogen Oxides or Oxides of Nitrogen
NO_y - Nitrogen Species
NSR - New Source Review
NNSR - Nonattainment New Source Review

NWS - National Weather Service
O₃ - Ozone
OAQPS - Office of Air Quality Planning and Standards
OASIS - Online Access and Service Information System
OBD - On-Board Diagnostics
ODEQ - Oklahoma Department of Environmental Quality
ORISN - Acid Rain Program Facility Identifier
OSAT - Ozone Source Apportionment Technology
OTAG - Ozone Transport Assessment Group
OZPK - Ozone Peak
PAMs - Photochemical Assessment Monitoring Sites
PEI - Periodic Emissions Inventory
PGM - Photochemical Grid Model
PiG - Plume-in-Grid
PLNAME - Plant Name
PM₁₀ - Particulate Matter less than 10 microns
ppb - Parts Per Billion
ppbc - Parts Per Billion Carbon
ppm - Parts Per Million
ppmv - Parts Per Million by Volume
PREAM - PREprocessor for Area and Mobile source emissions
PREPNT - PREprocessor for PoiNT
PSDB - Point Source Database
QA/QC - Quality Assurance/Quality Control
RACT - Reasonably Available Control Technology
RAQPC - Regional Air Quality Planning Committee
RFG - Reformulated Gas
REMI - Regional Economic Modeling, Inc.
ROP - Rate-of-Progress
RSQE - Research Seminar in Quantitative Economics
SAI - Systems Applications International
SAIMM - Systems Applications International Meteorological Model
SB - Senate Bill
SCC - Source Classification Code
SCRAM - Support Center for Regulatory Air Models
SETRPC - Southeast Texas Regional Planning Commission
SIC - Standard Industrial Classification
SIP - State Implementation Plan
SMOKE - Sparse Matrix Operator Kernel Emissions
SO₂ - Sulfur Dioxide
SO_x - Sulfur Compounds
SOCMI - Synthetic Organic Chemical Manufacturing Industry
SumPol - Sum of identified PAMS target list compounds
TAC - Texas Administrative Code
TACB - Texas Air Control Board
TAFB - Texas Alternative Fuel Fleet
TAZ - Traffic Analysis Zone
TCAS - Texas Clean Air Strategy
TCF - Texas Clean Fleet

TCM - Transportation Control Measure
TIGER - Topographically Integrated Geographic Encoded Referencing System
TMPFAC - TemPoral FACtor
TMPRL - TeMPoRaL allocation processor
TNMOC - Total nonmethane organic compounds
TNRCC - Texas Natural Resource Conservation Commission (commission)
TOMS - Total Ozone Mapping Spectrometers
TPOD - Tons Per Ozone Day
TPY - Tons Per Year
TSP - Total Suspended Particulate
TTI - Texas Transportation Institute
UAM - Urban Airshed Model
USDA - United States Department of Agriculture
USGS - United States Geological Survey
UTM - Universal Transverse Mercator
VMEP - Voluntary Mobile Source Emissions Reduction Program
VMT - Vehicle Miles Traveled
VNR or VNRAT- VOC-NO_x ratios
VOC - Volatile Organic Compounds
WDWE - Weekday/Weekend
WOE - Weight of evidence

**BEAUMONT/PORT ARTHUR ATTAINMENT DEMONSTRATION
LIST OF APPENDICES**

APPENDIX #	APPENDIX NAME
Appendix A.	Estimation of NO _x Emission Changes in the Beaumont/Port Arthur Area Using Survey Data
Appendix B.	<i>Application of UAM-V for the Houston/Galveston and Beaumont/Port Arthur Nonattainment Areas for Two Multiday Ozone Episodes</i>
Appendix C.	<i>Attainment Demonstration for the Houston/Galveston Ozone Nonattainment Area</i>
Appendix D.	Migration of the Beaumont-Port Arthur Ozone Modeling from UAM-V to CAMx
Appendix E.	Migration from Houston-Galveston Ozone Modeling from UAM-V to CAMx
Appendix F.	Incorporation of Emissions Improvements for the Beaumont-Port Arthur CAMx Modeling
Appendix G.	Incorporation of Emissions Improvements for the Houston-Galveston CAMx Modeling
Appendix H.	Migration of Emission Inventory Components from EPS-2 to SMOKE for the August 31- September 2, 1993 COAST Episode
Appendix I.	Migration of Emission Inventory Components from EPS-2 to SMOKE for the September 6-11, 1993 COAST Episode
Appendix J.	Development of COAST CAMx Initial and Boundary Conditions[
Appendix K.	Evaluation of the CAMx Base Case Model Performance for the August 31-September 2, 1993 COAST Episode
Appendix L.	Evaluation of the CAMx Base Case Model Performance for the September 6-11, 1993 COAST Episode
Appendix M.	The Effect of Houston/Galveston Emissions upon Beaumont/Port Arthur's Ability to Attain the National Ambient Air Quality Standard for Ozone
Appendix N.	Growing the 1993 Base Case Inventory for the August 31, 1993–September 2, 1993 COAST Episode to the Year 2007
Appendix O.	Control Strategy Modeling with CAMx for the Beaumont-Port Arthur Area
Appendix P	Future Design Value Calculations

Appendix Q. Supplementary Air Quality Analyses for BPA

The modeling and air quality analysis appendices (B through P) and electronic modeling data files referenced in this document can be obtained from James Red by phone at (512) 239-1465, or by e-mail at jred@tnrcc.state.tx.us. Appendix A can be obtained from Lisa Martin by phone at (512) 239-1966 or by e-mail at lmartin@tnrcc.state.tx.us.

VI: Ozone Control Strategy

A. INTRODUCTION

This introduction is intended to provide the reader with a broad overview context of the SIP revisions that have been submitted to the EPA by the State of Texas. Some sections may be obsolete or superseded by new revisions, but have been retained for the sake of historical completeness. The reader is referred to the body of the SIP for details on the current SIP revision.

Requirements for the SIP specified in 40 Code of Federal Regulations 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 SO₂ and 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, TSP, or CO exceeded an NAAQS during the period from 1975 to 1977. On October 5, 1978, the Administrator of the EPA promulgated a lead ambient air quality standard. The FCAA Amendments of 1977 required that each state submit an implementation plan for the control of any new criteria pollutant. A SIP revision for lead was submitted in March 1981.

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

Supplemental material, including emission inventories for VOCs and TSP submitted with the 1979 SIP revisions, is included in Appendices H and O of the 1979 SIP submittal.

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

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

The FCAA Amendments of 1977 required SIPs to be revised by December 31, 1982 to provide additional emission reductions for those areas for which EPA approved extensions of the deadline for attainment of the NAAQS for ozone or CO. Paragraph B.5. of this section of the SIP contains the revision to the Texas SIP submitted to comply with the FCAA Amendments of 1977 and EPA rules for 1982 SIP revisions. Supplementary emissions inventory data and supporting documentation for the revision are included in Appendices Q through Z of the 1982 SIP submittal.

The only area in Texas receiving an extension of the attainment deadline to December 31, 1987 was Harris County for ozone. Proposals to revise the Texas SIP for Harris County were submitted to EPA on December 9, 1982. On February 3, 1983, EPA proposed to approve all portions of the plan except for the Vehicle Parameter 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 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 TACB requested a 6-month extension of the deadline (to August 31, 1985) on October 19, 1984. EPA approved this request on November 16, 1984.

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

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

The FCAA Amendments of 1990 authorized EPA to designate areas failing to meet the NAAQS for ozone as nonattainment and to classify them according to severity. The four areas in Texas and their respective classifications include: HGA (severe), BPA (serious), ELP (serious), and DFW (moderate).

The FCAA Amendments required a SIP revision to be submitted for all ozone nonattainment areas

classified as moderate and above by November 15, 1993, which described in part how an area intends to decrease VOC emissions by 15%, net of growth, by November 15, 1996. The amendments also required all nonattainment areas classified as serious and above to submit a revision to the SIP by November 15, 1994, which described how each area would achieve further reductions of VOC and/or NO_x in the amount of 3.0% per year averaged over three years and which includes a demonstration of attainment based on modeling results using the UAM. In addition to the 15% reduction, states were also required to prepare contingency rules that would 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 ROP reduction in two phases. Phase I consisted of a core set of rules comprising a significant portion of the required reductions. This phase was submitted by the original deadline of November 15, 1993. Phase II consisted of any remaining percentage toward the 15% net of growth reductions, as well as additional contingency measures to obtain an additional 3.0% of reductions. Phase II was submitted by May 15, 1994. The complete list of contingency measures was submitted by November 15, 1994. The appropriate compliance date was to be incorporated into each control measure to ensure that the required reductions would be achieved by the November 15, 1996 deadline. A commitment listing the potential rules from which the additional percentages and contingency measures were selected was submitted in conjunction with the Phase I SIP on November 15, 1993. That list of Phase II rules was intended to rank options available to the state and to identify potential rules available to meet 100% of the targeted reductions and contingencies. Only those portions of the Phase II rules

needed to provide reasonable assurance of achieving the targeted reduction requirements were adopted by the commission.

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

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

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

On November 9, 1994, the state submitted a SIP revision designed to meet the 3% per year ROP requirements for the years 1997-1999. This Post-96 ROP SIP revision detailed how the BPA and HGA nonattainment areas intended to achieve these three years' reductions of VOC (or 9% net-of-growth). Most of this amount was achieved by quantifying additional reductions due to existing rules and

reductions due to federally-mandated rules. Rules to achieve the further reductions needed to meet the ROP SIP goal were submitted to EPA on January 11, 1995. This submittal included modeling demonstrating progress toward attainment, using a 1999 future year emissions inventory.

On August 14, 1994, the state submitted preliminary UAM modeling results for the BPA and HGA nonattainment areas that showed the relationship between emission levels of VOC and NO_x, and ozone concentrations. This modeling was conducted with a 1999 future year emissions inventory. Based on the results of this preliminary modeling, which showed that NO_x reductions might increase ozone concentrations, on April 12, 1995 the state received a temporary §182(f) exemption from all NO_x requirements, including RACT, I/M, NO_x NSR, and transportation conformity requirements. Permanent §182(f) exemptions from all NO_x requirements were granted for DFW and ELP, and temporary exemptions until December 31, 1996 for HGA and BPA. The commission subsequently requested that EPA extend this date until December 31, 1997. EPA approved this 1-year extension on May 14, 1997.

On March 2, 1995, Mary Nichols, EPA Assistant Administrator for Air and Radiation, issued a memo which gave states some flexibility to design a phased Attainment Demonstration. It provided for an initial phase which was intended to continue progress in reducing levels of VOC and/or NO_x, while giving states an opportunity to address scientific issues such as modeling and the transport of ozone and its precursor pollutants. The second phase was designed to draw upon the results of the scientific effort and design a plan to bring the area into attainment. To constitute Phase I under this approach, the EPA guidance required that states submit the following SIP elements by December 31, 1995:

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

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

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

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

An enforceable commitment to:

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

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

ROP SIP modeling was developed for the HGA nonattainment area in two phases using the UAM. The first phase of ROP modeling was the modeling submitted in January 1995, as described above. The second phase of the ROP modeling was conducted using data obtained primarily from the COAST project, an intensive 1993 field study. The COAST modeling for HGA and the associated SIP were projected to be completed by December 1996 for submittal in May of 1997. Control strategies developed in this second phase were planned to be based on a more robust database, providing a higher degree of confidence that the strategies would result in attainment of the ozone NAAQS or target ozone value. A discussion of the schedule for the UAM modeling for the Phase II Attainment Demonstration can be found in Appendix 11-F of the January 10, 1996 submittal.

On January 29, 1996, the EPA proposed a limited approval/limited disapproval for the Texas 15% ROP SIP revision. The EPA proposed a limited approval because the SIP revision would result in significant emission reductions from the 1990 baseline and would, therefore, improve air quality. Simultaneously, the EPA proposed a limited disapproval because it believed that the plan failed to demonstrate sufficient reductions to meet the 15% ROP requirements. It also proposed a limited approval/disapproval of the contingency plans (designed to achieve an additional 3% of reductions if needed because a milestone is missed) along the same lines as the 15% action. The EPA stated that some of the control measures submitted along with the SIP revision did not meet all of the requirements of the FCAA Amendments of 1990 and, therefore, cannot be approved. The EPA further stated that it was not making a determination at this time about whether the state had met its requirements regarding RACT, or any other underlying FCAA Amendments of 1990 requirements. Finally, the EPA proposed approval of the Alternate Means of Control portion of the November 9, 1994 Post-96 SIP submittal, but did not propose action on any other portion of that submittal.

Additionally, on November 29, 1995, the President signed the National Highway Systems Designation Act, which, among other things, prohibited EPA from discounting the creditable emissions from a decentralized vehicle I/M testing program if an approvable conditional I/M SIP revision was submitted to EPA within 120 days of the bill's signature. EPA's Office of Mobile Sources issued guidance stating that it would accept an interim I/M SIP proposal and Governor's letter 120 days after signature of the bill in lieu of an adopted SIP revision. The SIP proposal and letter was submitted to the EPA prior to the March 27, 1996 deadline to meet the 120-day time frame. The final I/M SIP revision (Rule Log No. 96104-114-AI), commonly referred to as the "Texas Motorist's Choice Program," was adopted by the commission on May 29, 1996 and submitted to the EPA by the state on June 25, 1996. On October 3, 1996, EPA proposed (61 FR 51651-51659) conditional interim approval of the Texas Motorist's Choice Program based upon the state's good faith estimate of emission reductions and the program's compliance with the

Clean Air Act.

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

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

The ETR program revision to the SIP and ETR rule were adopted in October 1992 by the TACB to meet the mandate established in the FCAA Amendments of 1990 (§182 (d)(1)(B)). This section of the FCAA required states with severe or extreme ozone nonattainment areas to develop and implement ETR programs in those areas. For Texas, the only area affected was the HGA area. The ETR program required large employers (those with 100 or more employees) to implement trip reduction programs that would increase the average passenger occupancy rate of vehicles arriving at the workplace during the peak travel period by 25% above the average for the area.

Congress amended the FCAA in December of 1995 by passing House Rule 325. This amendment allows the state to require an ETR program at its discretion. It also allows a state to "remove such provisions (ETR program) from the implementation plan...if the state notifies the Administrator, in writing, that the state has undertaken, or will undertake, one or more alternative methods that will achieve emission

reductions (1.81 tons/day) equivalent to those achieved by the removed...provisions.” As such, large employers will no longer be mandated to implement trip reduction programs. The HGA ozone nonattainment area will, however, through the coordination of the Houston-Galveston Area Council, implement a voluntary regional initiative to reduce vehicle trips.

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

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

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

Furthermore, subsequent air quality trends demonstrated that BPA is more properly classified as a moderate nonattainment area, and could attain the standard by the required date for moderate areas of November 15, 1996. Therefore, Governor Bush sent a letter and technical support to EPA on July 20, 1995, requesting that the BPA area be reclassified to moderate nonattainment status. BPA planned to

demonstrate attainment one of the following ways:

- , Monitored values showing attainment of the standard at state-operated monitors for the years 1994-1996, which is the time line the FCAA Amendments of 1990 specifies for moderate areas.
- , UAM modeling showing attainment of the standard but for transport of ozone and/or precursors.

EPA Region 6 verified the data submitted in support of this request and concurred that it is valid. On June 3, 1996, the reclassification of the BPA area became effective. Because the area was classified as serious, it was following the SIP submittal and permitting requirements of a serious area, which included the requirements for a Post-96 SIP. With the consolidated SIP submittal, the commission removed the BPA area from the Post-96 SIPs, which became applicable to the HGA nonattainment area only.

The State of Texas, in a committal SIP revision submitted to EPA on November 15, 1992, opted out of the Federal Clean Fuel Fleet program in order to implement a fleet emission control program designed by the state. In 1994, Texas submitted the state's opt-out program in a SIP revision to the EPA and adopted rules to implement the TAFF program. In 1995, the 74th Texas Legislature modified the state's alternative fuels program through passage of SB 200. In response to SB 200, the commission adopted regulations modifying the TAFF program to create the TCF program.

Since adoption on July 24, 1996 and subsequent submission to EPA of the TCF SIP revision, the 75th Texas Legislature modified the state's alternative program once again through passage of SB 681. Staff is currently working on modifications to the TCF program, now called the TCF Low Emission Vehicle program, to reflect changes mandated by SB 681.

On June 29, 1994, the commission adopted a revision to the SO₂ SIP regarding emissions in Harris

County. The SIP revision was required by EPA because of exceedances of the SO₂ NAAQS in 1986, 1988, and 1990. An EPA study conducted by Scientific Applications International Corporation also predicted SO₂ exceedances. On April 22, 1991, the EPA declared that portions of Harris County were potentially in nonattainment of the SO₂ NAAQS. Consequently, the HRM Corporation volunteered to find reductions in SO₂ in order to prevent being redesignated to nonattainment. HRM's efforts resulted in finding voluntary SO₂ reductions. These reductions were adopted in 13 commission Agreed Orders and were included as part of the June 29, 1994 SIP revision. The EPA approved the Harris County SO₂ SIP on March 6, 1995 (60 FR 12125).

On May 14, 1997, the commission adopted an additional revision to the Harris County SO₂ SIP to incorporate modifications to two of the 13 commission Agreed Orders. The remaining sections of the SIP remained the same. While on the scale of "minor technical corrections," the modified orders were submitted as a SIP revision because the new emission rates differ from what EPA had previously approved. The two Agreed Order modifications concerned grandfathered units at Simpson Pasadena Paper Company and Lyondell-Citgo Refining Company, Ltd. The commission approved changes to both Agreed Orders on July 24, 1996.

On May 14, 1997, the commission also adopted a revision to the SIP modifying the vehicle I/M program. This revision removed the test-on-resale component that had been included in the vehicle I/M program, as designed in July of 1996. Test-on-resale required persons selling their vehicles in the I/M core program areas to obtain emissions testing prior to the title transfer of such vehicles. Test-on-resale was not required to meet the FCAA Amendments of 1990 and did not produce additional emissions reduction benefits. The SIP revision also incorporated into the SIP the Memorandum of Understanding between the commission and the Department of Public Safety, adopted by the commission on November 20, 1996.

The FCAA Amendments of 1990 required that, for severe and above ozone nonattainment areas, states develop SIP revisions that include specific enforceable TCMs, as necessary, to offset increases in motor vehicle emissions resulting from growth in VMT or the number of vehicle trips. This SIP revision would also satisfy reductions in motor vehicle emissions consistent with the 15% ROP and the Post-1996 ROP SIPs.

Therefore, the commission developed and submitted to EPA a committal SIP revision for the HGA nonattainment area on November 13, 1992, and VMT Offset SIP revisions on November 12, 1993 and November 6, 1994, to satisfy the requirements of the 15% ROP SIP revision. The former SIP revision laid out a set of TCMs and other mobile source controls which reduced emissions below the modeled ceiling. The 1994 SIP revision did not require additional TCMs.

As a result of changes in the I/M and the ETR programs, it was necessary to do the 1997 VMT Offset SIP revision for the HGA area, which was adopted on August 6, 1997. Additional TCMs were included: high occupancy vehicle lanes, park and ride lots, arterial traffic management systems, computer transportation management systems, and signalization. These TCMs were part of the “Super SIP” submitted to EPA on July 24, 1996.

Using the best technical guidance and engineering judgement available at the time, the State of Texas calculated emissions reductions available from the enhanced monitoring rule that was to be part of the Title V permitting program. The enhanced monitoring rule was later revised and transformed into the CAM Rule. Texas maintained that its calculation methodologies still accurately reflected the amount of creditable reductions available. EPA has indicated that it disagrees with the calculation methodologies used by the state and intends to disapprove the 9% SIP as a result. EPA has also indicated that the emission reduction credits claimed for the Texas Clean Fuels Fleet program are not approvable due to a

legislative change to the program. The state plans to submit a SIP revision for this program in a separate action, but has removed the credits claimed in the 9% SIP in this action. The State of Texas proposes to submit a revision to the 9% SIP which revises the reductions claimed by the state toward the 9% emissions target.

The State of Texas did not reapply for an extension of the NO_x §182(f) waivers for HGA and BPA as discussed previously. Therefore, on December 31, 1997, the waivers expired. The state is now required to implement several NO_x control programs. Among them is a requirement for all major NO_x sources within the area to implement RACT. The state has adopted a revised compliance date of November 15, 1999 for this program.

The DFW area was classified as a moderate ozone nonattainment area in accordance with the FCAA Amendments of 1990. As a moderate nonattainment area, DFW was to demonstrate, through monitoring, attainment of the 1-hour ozone standard by November 15, 1996, or face being “bumped up” to the serious classification. Air quality data from DFW ambient air quality monitors for the years 1994-96 show that the 1-hour NAAQS for ozone has been exceeded more than one day per year over this three-year period. On February 18, 1998, the EPA issued a final notice in the *Federal Register* that the DFW area was being reclassified to the serious classification for failing to attain the NAAQS for ozone. As a result of this reclassification, the EPA required that a new SIP demonstrating attainment of the ozone standard in DFW be submitted by March 20, 1999. The state submitted a SIP for DFW that included photochemical modeling showing the level of reductions needed to attain the standard by 1999, a 9% ROP target calculation for the years 1997-99, VOC RACT rules in Chapter 115 applicable to sources meeting the 50 tpy major source level, NO_x RACT rules in Chapter 117 applicable to major sources of NO_x, and amendments to Chapter 116 reinstating nonattainment new source review for NO_x. The governor

submitted this SIP to EPA on March 16, 1999. Because there was not enough time to implement the rules to achieve necessary reductions of ozone precursor emissions in the DFW area by the required attainment date of November 15, 1999, the state proposed to submit in March 2000 a full attainment demonstration including a complete rule package necessary to attain the 1-hour ozone standard.

In November 1998, the SIP revision submitted to EPA in May 1998 became complete by operation of law. However, EPA stated that it could not approve the SIP until specific control strategies were modeled in the attainment demonstration. EPA specified a submittal date of November 15, 1999 for this modeling. As the HGA modeling protocol evolved, the state eventually selected and modeled seven basic modeling scenarios. As part of this process, a group of HGA stakeholders worked closely with commission staff to identify local control strategies for the modeling. This modeling showed attainment of the 1-hour ozone standard with application of WOE arguments. As a follow-up to this SIP, the state committed to refine emissions inventory estimates, conduct additional modeling, and submit adopted rules to EPA by December 31, 2000. The commission adopted these revisions to the SIP on October 27, 1999. Background on this SIP revision is provided in more detail in Chapter 1.

The BPA area is classified as moderate, and therefore was required to attain the 1-hour ozone standard by November 15, 1996. The BPA area did not attain the standard by that date, and also will not attain the standard by November 15, 1999, the attainment date for serious areas. In determining the appropriate attainment date for an area, EPA may consider the effect of transport of ozone or its precursors from an upwind area which interferes with the downwind area's ability to attain. On July 16, 1998, EPA issued a guidance memorandum titled "Extension of Attainment Dates for Downwind Transport Areas." The guidance, referred to hereinafter as the "transport guidance," provides a means for EPA to extend the attainment date for an area affected by transported air pollution, without reclassifying ("bumping up") the area to a higher classification. The transport guidance is particularly relevant to BPA, which is downwind

of the HGA area and is affected by transport from HGA. If EPA approved such a determination for BPA, the area would have until no later than November 15, 2007, the attainment date for HGA, to attain the 1-hour ozone standard. On April 16, 1999, EPA proposed in the *Federal Register* to allow BPA to take advantage of the transport guidance if an approvable attainment demonstration is submitted by November 15, 1999. This SIP revision contains results of photochemical modeling demonstrating transport from HGA to BPA, and, following EPA's transport guidance, demonstrating that BPA attains the 1-hour ozone standard. In addition, this SIP revision proposes to adopt rules for IWW and batch process sources to ensure that VOC emission limits for these sources meet EPA's guidelines for RACT. Furthermore, the state proposes to adopt rules establishing NO_x RACT emission limits for gas-fired, lean-burn stationary internal combustion engines.

B. OZONE CONTROL STRATEGY

1. POLICY AND PURPOSE (Revised.)

a. Primary Purpose of Plan (Revised.)

The primary purpose of this plan is to fulfill §182(b)(1) and (2) of the FCAA Amendments of 1990 concerning attainment and RFP demonstrations, RACT, and various EPA guidance.

b.-d. (No change.)

2. SUMMARY OF THE PRINCIPAL ELEMENTS ADDRESSED WITHIN THIS PLAN

(Revised.)

a.-c. (No change.)

d. Required Emission Reductions (Revised.)

This plan contains an estimate of the required levels of reductions of the ozone precursors VOC and NO_x necessary to attain the 1-hour ozone standard in the BPA nonattainment area.

e. Sources of Emission Reductions (Revised.)

Substantial quantities of VOC and NO_x are emitted by business, industry, consumer products, and motor vehicles. Because photochemical modeling shows that both VOC and NO_x reductions are effective in reducing ground level ozone in the BPA area, this SIP also identifies, under separate rulemaking, revisions to the NO_x RACT requirements to include lean burn engines. Also, as a result of utilizing EPA's transport policy, VOC RACT rules are being modified for IWW and batch processes.

3.-8. (No change.)

9. SIP REVISIONS FOR THE ATTAINMENT DEMONSTRATION (Revised.)

a.-c. (No change.)

d. Beaumont/Port Arthur Attainment Demonstration (New.)

10. SIP REVISIONS FOR THE REDESIGNATION AND MAINTENANCE PLANS

(No change.)

11. SIP REVISIONS FOR POST-96 RATE-OF-PROGRESS (Revised.)

a.-d. (No change.)

e. Beaumont/Port Arthur Ozone Control Strategy (New.)

12. SOCIAL AND ECONOMIC CONSIDERATIONS OF THE PLAN (Revised.)

a.-i. (No change.)

j. Evaluation of the Beaumont/Port Arthur Attainment Demonstration (New.)

13. FISCAL AND MANPOWER RESOURCES (No change.)

14. HEARING REQUIREMENTS

a.-i. (No change.)

j. Public Hearings for the Beaumont/Port Arthur Attainment Demonstration (New.)

The state conducted a public hearing for this SIP on August 9, 1999, in Beaumont at 5:30 p.m. at the John Gray Institute, located at 855 Florida Avenue. The public comment period ended on August 23, 1999.

CHAPTER 1: BACKGROUND

The BPA ozone nonattainment area consists of Hardin, Jefferson, and Orange Counties. The BPA area is classified as moderate and, therefore, was required to attain the 1-hour ozone standard of 0.12 parts per million by November 15, 1996. The BPA area did not attain the standard by that date and also will not attain the standard by November 15, 1999, the attainment date for serious areas.

In determining the appropriate attainment date for an area, EPA may consider the effect of transport of ozone or its precursors from an upwind area which interferes with the downwind area's ability to attain. On July 16, 1998, EPA issued a guidance memorandum titled "Extension of Attainment Dates for Downwind Transport Areas." The guidance, referred to hereinafter as the "transport policy," provides a means for EPA to extend the attainment date for an area affected by transported air pollution, without reclassifying ("bumping up") the area to a higher classification. The transport policy was published in the March 25, 1999 *Federal Register* with a request for comments on its interpretation. The transport policy is particularly relevant to BPA, which is downwind of the HGA area and is affected by transport from HGA. If EPA approved such a determination for BPA, the area would have until no later than November 15, 2007, the attainment date for HGA, to attain the 1-hour ozone standard.

In order to receive EPA approval under the transport policy, an area must meet the following requirements:

1. Be identified as an affected transport area;
2. Submit an approvable attainment demonstration with any necessary, adopted local measures, showing attainment of the 1-hour ozone standard no later than the date that reductions are achieved

in the upwind area;

3. Adopt all applicable local measures under the area's current classification, as well as any additional measures necessary to show attainment; and
4. Implement all adopted measures as expeditiously as practicable, but no later than the date that reductions are achieved in the upwind area.

In a letter to the Governor dated October 30, 1998, the EPA Region 6 office in Dallas informed the state of the criteria under which EPA would consider extension of BPA's attainment date under the transport policy. The Governor replied to EPA in a letter dated December 21, 1998, in which the state committed to work with EPA to submit the necessary SIP revisions to obtain approval under the transport policy.

On April 16, 1999, EPA proposed in the *Federal Register* to allow BPA to take advantage of the transport policy if an approvable attainment demonstration is submitted by November 15, 1999.

CHAPTER 2: EMISSIONS INVENTORY

2.1 OVERVIEW

The 1990 Amendments to the FCAA require that EIs be prepared for ozone nonattainment areas. Because ozone is photochemically produced in the atmosphere when VOCs are mixed with NO_x and CO¹ 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 used. The EI provides data for a variety of air quality planning tasks, including establishing baseline emission levels, calculating reduction targets, control strategy development for achieving the required emission reductions, emission inputs into air quality simulation models, and tracking actual emission reductions against the established emissions growth and control budgets. 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, which are each explained below.

2.2 POINT SOURCES

Major point sources are defined for inventory purposes in nonattainment areas as industrial, commercial, or institutional sources which have actual emissions of criteria pollutants at or above the following levels: 10 tpy of VOC, 25 tpy of NO_x, or 100 tpy of any of the other criteria pollutants, CO, SO_x, PM₁₀, or lead. For the remaining areas of the state, any company that emits a minimum of 100 tpy of any criteria pollutant must submit an inventory. Additionally, any source which generates or has the potential to

¹CO plays a relatively minor role in ozone formation compared with VOC and NO_x.

generate at least 10 tpy of any single HAP or 25 tpy of aggregate HAPs is also required to report emissions to the commission.

To collect emissions and industrial process operating data for these plants, the commission mails EIQs to all sources identified as having emissions at or above the triggering level. Companies are asked to report not only emissions data for all emissions generating units and emission points, but also the type, and, for a representative sample of sources, the amount of materials used in the processes which result in emissions. Information is also requested in the EIQ on process equipment descriptions, operation schedules, emissions control devices currently in use, abatement device control efficiency, and stack parameters such as location, height, and exhaust gas flow rate. All data submitted via the EIQ are then subjected to rigorous quality assurance procedures by the technical staff of the Industrial Emissions Assessment Section and entered into the PSDB by the Data Services Section.

In projecting point source emissions to the attainment year of 2007, commission staff used actual emission trends as determined by a survey conducted in 1996. The survey results enabled staff to account for declining NO_x emission rates observed from 1990 to 1996. This method ensures that only trends reflecting real reductions in emissions will be used in the future year projection. The methodology and conclusions of this procedure are presented in Appendix A.

2.3 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. 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: hydrocarbon 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 wildfires. 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. Population is the most commonly used activity surrogate for many ASCs, while other activity data include amount of gasoline sold in an area, employment by industry type, and acres of cropland.

2.4 ONROAD MOBILE SOURCES

Onroad mobile sources consist of automobiles, trucks, motorcycles, and other motor vehicles traveling on public roadways in the nonattainment area. Combustion related-emissions are estimated for vehicle engine exhaust; evaporative hydrocarbon emissions are estimated for the fuel tank and other evaporative leak sources on the vehicle. Emission factors have been developed using the 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. 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 traveled by vehicle type, type of I/M program in place (if applicable), and gasoline vapor pressure. All of these inputs have an impact on the emission factor calculated by the MOBILE model, and every effort is made to input parameters reflecting local conditions. To complete the emissions estimate the

emission factors calculated by the MOBILE model must then be multiplied by the level of vehicle activity, VMT. The level of vehicle travel activity is developed from travel demand models run by the Texas Department of Transportation or the local council of governments. The travel demand models have been validated against a large number of ground counts of traffic passing over counters placed in various locations throughout each county. Estimates of VMT are often calibrated to outputs from the federal HPMS, which is a model built from a smaller number of traffic counters. Finally, roadway speeds, which are required for the MOBILE model's input, are calculated by a post-processor to the travel demand model.

The BPA onroad mobile source emissions inventory is being developed under contract to the commission by TTI. Task 1 of TTI's current work order calls for preparation of a link-based, bottom-up onroad mobile source inventory for BPA, using EPA's MOBILE5a model. This work was completed in Summer of 1999. The onroad mobile inventory numbers given in this SIP reflect the final TTI data, and are given in Table 2-1.

2.5 2007 MOTOR VEHICLE EMISSIONS BUDGETS

The 2007 onroad mobile source inventory figures for VOC and NO_x determine the motor vehicle emission budgets for 2007. The budgets, used for transportation conformity purposes, are identified as being 17.22 tpod for VOC and 29.94 tpod for NO_x. These figures have been calculated by subtracting all onroad mobile source reductions from the projected, uncontrolled 2007 onroad mobile source emissions forecast. The onroad mobile inventory numbers reflect the final data provided in Summer of 1999. Motor vehicle emission budget calculations are shown in Table 2-1.

Table 2-1

2007 Motor Vehicle Emission Budgets for BPA

	VOC (tpod)	NO _x (tpod)
2007 onroad emissions projection	20.87	36.72
FMVCP, Tier I credits (1990-1996)	0.21	0.00
FMVCP, Tier I credits (1990-2007)	3.44	6.78
1996 transportation control measures	0.00	0.00
2007 transportation control measures	0.00	0.00
2007 motor vehicle emissions budget	17.22	29.94

2.6 NONROAD MOBILE SOURCES

Nonroad mobile sources are a subset of the area source category. This subcategory includes aviation aircraft, marine vessels, recreational boats, railroad locomotives, and a very broad category that includes everything from the engines on farm and construction equipment to trimmers. Calculation methods for emissions from nonroad engine sources vary considerably because of the differences in usage patterns, but in general they are based on manufacturer-supplied information about engine horsepower, load factor, emission factors, usage, and equipment sales and distribution. Emission estimates for all sources in the nonroad category except aircraft were originally developed by a contractor to EPA's Office of Mobile Sources, and subsequently commission staff have projected the emission levels using EGAS. Aircraft emissions were estimated with landings and takeoff data for airports in each area multiplied by EPA-developed emission factors for aircraft operations.

2.7 BIOGENIC SOURCES

Biogenic sources are another subset of area sources, and include hydrocarbon emissions from crops, lawn grass, and forests, as well as a small amount of NO_x emissions from soils. Plants are sources of VOC such as isoprene, monoterpene, and alpha-pinene. Tools for estimating emissions include satellite imaging for mapping of vegetative types, field biomass surveys, and computer modeling of emissions estimates based on emission factors by plant species (PCBEIS-2). Emissions from biogenic sources are subtracted from the inventory prior to determining any required reductions for a ROP plan. However, the biogenic emissions are important in determining the overall emissions profile of an area and therefore are required for regional air quality dispersion modeling.

2.8 EMISSIONS SUMMARY

The 1990 base year emissions inventory summary for the BPA nonattainment area is included in Figures 2.7-1 and 2.7-2 for VOC and NO_x, respectively. CO emissions will be disregarded for purposes of this discussion. It is evident from the pie charts that the greatest emissions contribution in the BPA area is from stationary point sources. Contributions from VOC emission sources in ranking order are as follows: point sources make up 59% of the inventory; biogenics are 22%; onroad mobile sources are 8%; area source emissions are 7%; and nonroad mobile sources are 4%. Contribution from NO_x emissions sources in ranking order are as follows: point sources, 59%; onroad mobile 14%; nonroad mobile 11%; and area sources 1%.

The 2007 emission inventory for the BPA nonattainment area is summarized in Figures 2.7-3 and 2.7-4 for VOC and NO_x, respectively. The 2007 emissions inventory is estimated based on projections from the 1990 base year inventory, using specific procedures approved by the EPA. Contributions from VOC sources in the 2007 inventory consist of the following: point sources 70%; area sources 13%; nonroad mobile sources 10%; and onroad mobile sources 7%. Contributions from NO_x sources consist of the following: point sources 54%; nonroad mobile sources 31%; onroad mobile sources 14%; and area sources 1%.

In summary, the percentages for both the 2007 VOC and NO_x emissions inventory increased for onroad mobile, area, and nonroad mobile sources, and decreased for point sources.

Figure 2.7-1

1990 VOC Emissions in Beaumont/Port Arthur

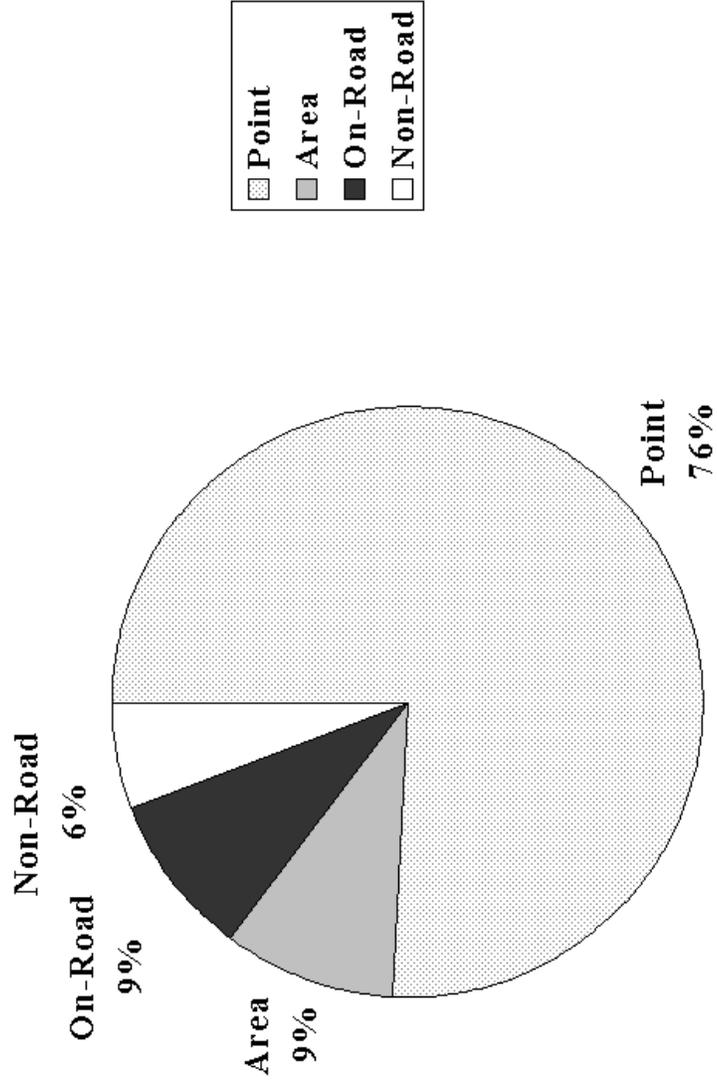


Figure 2.7-2

1990 NOx Emissions in Beaumont/Port Arthur

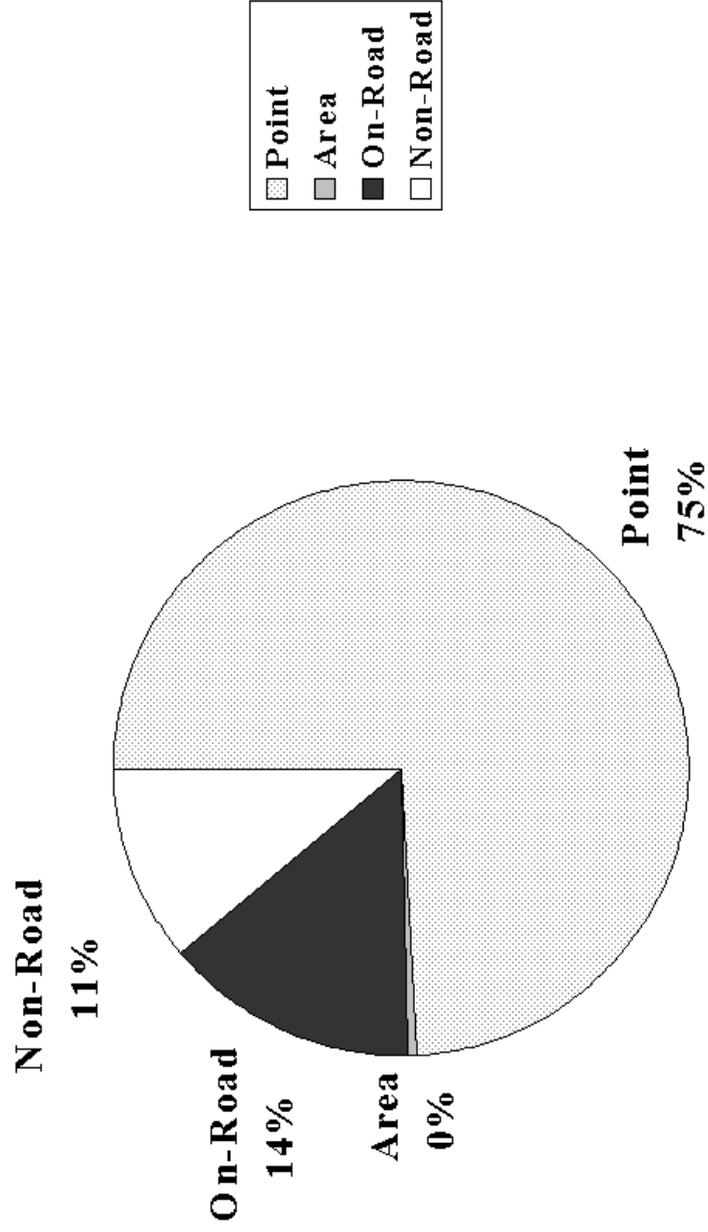


Figure 2.7-3

2007 VOC Emissions in Beaumont/Port Arthur

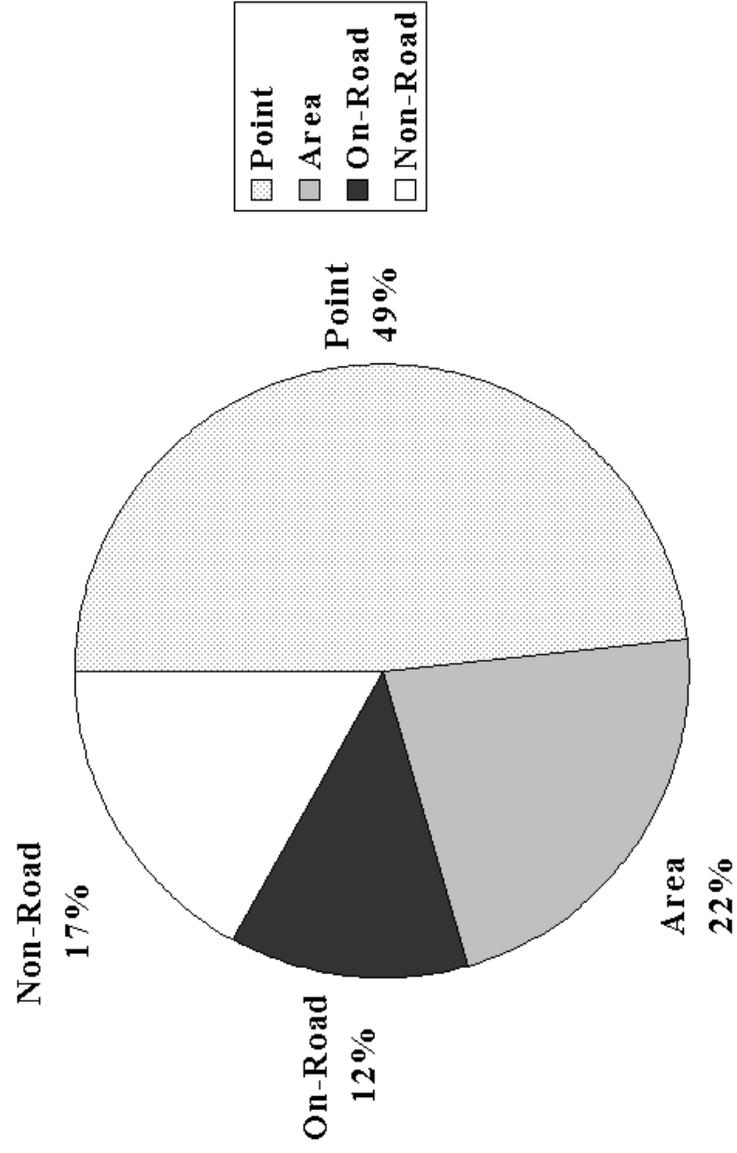
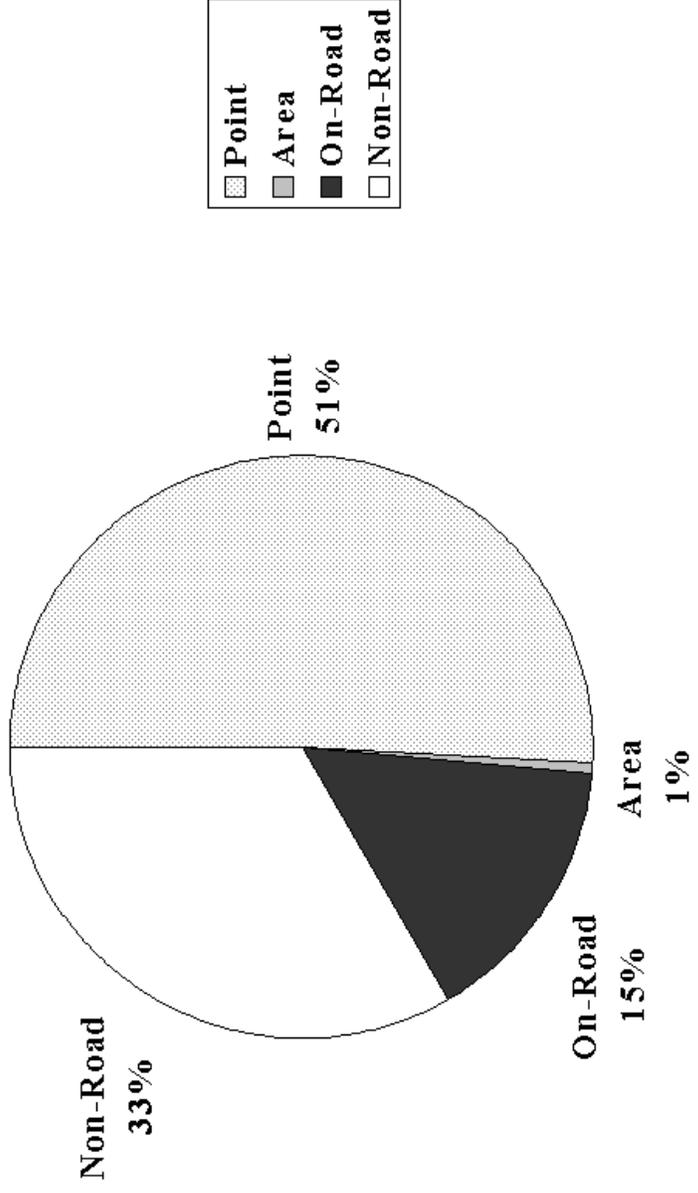


Figure 2.7-4

2007 NOx Emissions in Beaumont/Port Arthur



CHAPTER 3: PHOTOCHEMICAL MODELING

This chapter briefly describes the photochemical modeling conducted to demonstrate attainment of the 1-hour ozone standard in the BPA nonattainment area. The photochemical modeling required for the BPA attainment demonstration is somewhat different from that typically done for other areas, such as the HGA or DFW areas, since this demonstration also includes an analysis of the impact of pollutants transported from the HGA nonattainment area into the BPA area. To characterize this transport of ozone precursors into the BPA area, an ozone episode occurring between August 31, 1993 and September 2, 1993 was modeled. In addition, an analysis of locally-generated ozone conditions was conducted by modeling the September 8-11, 1993 episode. Both of these episodes occurred during the COAST study, which included a rich collection of meteorological, aerometric, and emissions data. The August 31, 1993 - September 2, 1993 episode was originally modeled by a commission contractor in 1995. The contractor's original report, *Application of UAM-V for the Houston/Galveston and Beaumont/Port Arthur Nonattainment Areas for Two Multiday Ozone Episodes*, is included as Appendix B. A complete description of the modeling conducted using the September 8-11, 1993 episode is contained in Appendix C, the commission's 1998 *Attainment Demonstration for the Houston/Galveston Ozone Nonattainment Area*. This BPA attainment demonstration will include the effects of specific local control strategies that will be implemented in the BPA area, as well as the effects of other point source-specific controls. In accordance with EPA's transport policy, an attainment year of 2007 (to coincide with the HGA area's attainment year) was used. Several enhancements to the traditional photochemical modeling approach were used.

These include:

- Use of the public domain CAMx model. A description of the migration from UAM-V to CAMx is found in Appendix D for the August 31, 1993 - September 2, 1993 episodes, and in Appendix E for

the September 8 - 11, 1993 episode.

- New biogenic emissions based on a comprehensive survey of biomass in the HGA and BPA nonattainment areas. A description of the changes in biomass and the effect on the base case photochemical modeling is given in Appendix F (August 31 - September 2, 1993 episode) and Appendix G (September 8 - 11, 1993 episode).
- Revised and enhanced 2007 projected onroad mobile source emissions for the HGA nonattainment counties. Also found in Appendices F and G.
- New emissions growth projections for point and nonroad mobile sources based on, respectively, an industry survey by the commission and EPA's new Nonroad model. (A complete description of how these projections were done is found in Appendix H, the revision to the attainment demonstration for the Houston/Galveston ozone nonattainment area).
- Emissions modeling using the SMOKE emissions modeling system. (Also found in Appendix H.)
- Future initial and boundary conditions derived from regional modeling conducted with CAMx (replacing similar initial and boundary conditions based upon UAM-V modeling). (This is documented in Appendix I).

Because some of these changes potentially could affect the model's ability to replicate observed ozone concentrations, the 1993 base case model performance was reevaluated, for both episodes, after updating the emissions. A number of statistical and graphical analyses were performed to compare the model's predicted ozone concentrations with monitored data. The results of this base case modeling is fully

described in Appendix I, for the August 31, 1993 - September 2, 1993 episode, and in Appendix J, for the September 8 - 11, 1993 episode. Model performance met EPA performance specifications in the BPA area for both primary episode days, with the exception of September 8, 1993 over the BPA 3-county nonattainment area. However, since this date had no monitored exceedances in the BPA subdomain, it may be considered a ramp-up day for BPA. A set of diagnostic and sensitivity analyses were performed to ensure that the model responded as expected to perturbations in the input data, and these analyses showed that the model behaved as expected in all cases. A complete discussion of the sensitivities and diagnostics is found in Appendices J and K.

Although these enhancements did not dramatically affect model performance, they do tend to lend additional credibility to the modeling analysis. This is underscored by the fact that the August 31 - September 2, 1993 episode is a transport episode, meaning that it is crucial to have the best possible model inputs for both upwind and downwind regions.

After establishing that model performance was acceptable for both episodes, the next step in the modeling process was to demonstrate that the upwind HGA nonattainment area contributes to ozone exceedances in the downwind BPA area. A sensitivity analysis, using the August 31 - September 2, 1993 episode, was conducted which simulated ozone formation with the influence of the HGA area removed. Compared with this episode's base case, this analysis demonstrated significantly decreased ozone concentrations in the BPA area, indicating transport from the upwind HGA area. This analysis is found in Appendix L.

The next step in the attainment demonstration was to assess the effects of control strategies to be implemented for the BPA area. After establishing that the current model's base case performance was acceptable, emissions were projected from 1993 to the attainment year of 2007, and a number of controls

were applied to form the future base. A discussion of the growing of the 1993 base case inventory to 2007 for the August 31, 1993 - September 2, 1993 episode is found in Appendix M, while the growth of the September 8 - 11, 1993 episode is documented in Appendix C. The modeled controls included previously adopted ROP reductions, NO_x RACT, and several rules proposed or adopted at the national level, such as low-sulfur fuels and rules governing the manufacture of small engines. In addition, an assumed list of control strategies in both the HGA counties and in affected Central and East Texas counties was modeled. These controls, by category, were:

Regional reductions:

Accounting for wide-spread NO_x reductions due to EPA NO_x SIP call (NO_x SIP call states only)

Onroad Mobile Sources:

Onroad mobile sources, HGA eight-county nonattainment area:

California RFG fuel standards

California diesel fuel standards

Conversion of transit buses to compressed natural gas or cleaner fuel

Additional transportation control measures

Texas Motorists' Choice I/M program in Harris County

Increased I/M compliance rate due to registration denial

Onroad mobile sources, affected Central and East Texas counties (excluding HGA and BPA nonattainment counties):

cleaner burning gasoline

Onroad mobile sources, affected Central and East Texas counties, plus HGA and BPA nonattainment

counties:

FMVCP

NLEV standards

Federal low sulfur gasoline

Tier II vehicle emission standards

Heavy-duty diesel standards

Update Tier II vehicles, low sulfur assumptions based on new EPA information

Nonroad Mobile Sources:

Nonroad mobile sources, eight-county HGA nonattainment area:

California RFG fuel standards

California diesel standards

California recreational vehicle standards

Reduce NO_x emissions from all categories by 50%

Off-road mobile, affected Central and East Texas counties (excluding HGA and BPA nonattainment counties):

cleaner burning gasoline

Off-road mobile, affected Central and East Texas counties plus HGA and BPA nonattainment counties:

Locomotive standards

Compression ignition standards for vehicles and equipment

Spark ignition standards for vehicles and equipment

Commercial marine vessel standards

Recreational marine standards

Heavy duty diesel standards

Area Sources:

Low NO_x standards for new water heaters and furnaces

Stationary Sources:

Stationary sources, affected Central and East Texas counties (excluding HGA and BPA nonattainment counties):

50% reduction of all utilities (permitted and grandfathered)

30% reduction from remaining grandfathered sources

Stationary sources, eight-county HGA nonattainment area:

Tier III point source controls (flue-gas cleanup plus burner modification)

A full description of these emission control scenarios is in Appendix I.

Initial controls modeled in the BPA area itself consist of a combination of VOC and NO_x source controls, consisting of the following:

- VOC and NO_x controls due to federally-mandated rules such as FMVCP, Tier I, heavy duty diesel engines, small engines, locomotives, and recreational marine engines
- NO_x controls on stationary, gas-fired lean-burn internal combustion engines

The modeling indicates that the 1-hour maximum modeled ozone concentration, from the August 31 - September 2, 1993 episode, within the BPA 3-county area, drops from 131 ppb (1993 base case) to 113 ppb. However, when the same controls were applied to the September 8 -11, 1993 episode (excluding September 8), the maximum modeled concentration over the BPA 3-county area was 136 ppb, which is still greater than the 0.12 ppm 1-hour ozone standard. Consequently, additional point source controls were modeled in the BPA 3-county area to gauge what additional reductions would be needed for BPA to attain the 1-hour standard. These consisted of:

- Tier I NO_x controls on point sources (burner modification) (referred to as scenario 5b1)
- Tier II NO_x controls on point sources (flue gas clean-up) (referred to as 5b2)
- Tier III NO_x controls on point sources (burner modification plus flue gas clean-up) (referred to as 5b3).

A summary of the emission reductions for these modeling scenarios is in Table 3-1.

Table 3-1. Point Source Emissions (tons/day) per County per Control Scenario

	2007 base case	Case 5b	5b+Tier I	5b+Tier II	5b+Tier III
Jefferson	73.91	70.75	43.88	12.98	9.53
Hardin	3.31	1.37	1.26	0.86	0.84

Orange	47.55	45.33	30.2	9.93	8.1
Totals	124.77	117.45	75.34	23.77	18.47
% reduction from base case		5.87	39.62	80.95	85.20

Any rules for affected Central and East Texas counties point source controls were not modeled in the BPA area for the above-mentioned point source control scenarios.

Table 3-2 below lists the results of the modeling for both modeled episodes.

Table 3-2. Results of Attainment Demonstration Modeling

Maximum daily modeled ozone for Beaumont/Port Arthur control scenarios, ppb						
Scenario	Sept. 1	Sept. 2	Sept. 8**	Sept. 9	Sept. 10	Sept. 11***
1993 Base case	106	132	165	139	155	162
2007 future base	98	119	150	126	142	147
Scenario 4b*	N/A	N/A	136	114	133	139
Scenario 5b	97	113	139	117	136	142
Scenario 5b1	97	107	133	111	129	136
Scenario 5b2	97	97	121	101	117	123
Scenario 5b3	97	98	121	100	116	121

*Scenario 4b is similar to Scenario 5b, except that controls for affected Central and East Texas counties of 50% utility NO_x reduction, 30% non-utility grandfathered point source NO_x reductions were applied in BPA, instead of the lean-burn engine rules

** September 8 base case model performance was outside of EPA specifications.

*** On September 11, boundary conditions, based on future base case emissions from inside the COAST domain, affected B/PA with artificially high concentrations. This is being reevaluated.

According to the results of this modeling analysis, Tier II point source NO_x controls bring the modeled maximum concentration down to 123 ppb (September 11), which is less than the 1-hour ozone standard of

0.12 ppm (rounding convention allows up to 125 ppb before a violation is represented). However, this reflects 80% cuts in point source NO_x. TNRCC notes that a reduction based on Tier I point source controls across the 3-county area brings the maximum concentration (for September 10, B/PA's only monitored exceedance day) down to 129 ppb. This reflects a point source NO_x reduction of roughly 40%. Although this modeled concentration is still greater than the 0.12 ppm standard, a future design value (DVf) calculation estimates the future design value over the BPA domain to be 114 ppb, which is less than the 1-hour standard. TNRCC believes that the Tier I point source NO_x controls, coupled with the DVf calculations, demonstrates that B/PA will attain the 1-hour ozone standard. A complete description of the DVf calculations is found in Appendix P.

Current EPA guidance allows for use of the DVf calculation as a part of the weight of evidence approach allowed for under the current 1-hour attainment demonstration guidance. As the agency moves forward with the additional revisions to the SIP based upon the Tier II control levels, this weight of evidence argument will be refined based on further EPA guidance.

In response to comments received, TNRCC remodeled the base case and three control strategies for the BPA area. For the new 2007 base case, a revised growth factor of 0.97437 was applied to the BPA 1993 base case point source NO_x emissions. This was done to account for any credits from banked and shutdown emissions that could come back into the inventory if these credits were used. This reduced the 1993 base case BPA NO_x emissions from 175 tpd to 170.51 tpd. In addition, the assumed controls for the HGA area for the 2007 control case were also altered. By source category, the new emissions changes are as follows:

Stationary Sources

- No change in HGA 8-county nonattainment area (Tier III assumed)

- NO_x emissions increased due to revised point source growth factor in BPA 3-county area

Onroad Mobile Source Emissions

- ASM-equivalent I/M program in 8-county HGA nonattainment area, including assumptions based on new information from Radian.
- Increase I/M compliance rate due to registration denial within 8-county HGA nonattainment area.
- Update Tier II, low sulfur gasoline over entire modeling domain.

Nonroad Mobile Source Emissions

- Shift construction equipment operating hours from 7 a.m. - 7 p.m. to noon - midnight for 8-county HGA nonattainment area.
- Remove the across-the-board 50% reduction in nonroad mobile source NO_x for the 8-county HGA nonattainment area.
- Reduce construction equipment NO_x by 33%, based on evaluation of Texas and California data, within the 8-county HGA nonattainment area.
- Reduce NO_x emissions from all categories by 24 tpod in HGA 8-county nonattainment area for 3%

VMEP credit

Area Source Emissions

- Stage I refueling of affected counties in East and Central Texas

Some of the strategies initially contemplated and modeled for the HGA SIP were withdrawn from that SIP. These strategies had been contemplated for follow-on modeling for the BPA SIP as well, but have been removed from consideration. The discarded strategies consisted of including an accelerated vehicle fleet turnover (2015 in place of 2007) and cutting nonroad mobile NO_x emissions in the 8-county HGA area by 50%.

With the revised future base case, HGA control case emissions and add-back of BPA banked and shutdown emissions in place, the 5b (current NO_x RACT plus mandated federal controls), 5b1 (Tier I point source controls) and 5b2 (Tier II point source controls) scenarios were remodeled for the BPA area for the September 8-11, 1993 episode. In addition, improve3-11d boundary conditions, based on additional regional modeling, were used. This minimized the effect of emissions that left the inner (COAST) domain on 9/11 and returned later that day. A comparison between the results of the original modeling and the revised modeling is shown in Table 3-3.

**Table 3-3. Comparison of Original Modeling with Revised Modeling
(Values in ppb ozone)**

Scenario	September 8*	September 9	September 10	September 11
Old 2007 base	150	126	142	147

New 2007 base	150	128	146	150
Old 5b	139	117	136	142
New 5b	140	119	139	143
Old 5b1	133	111	129	136
New 5b1	136	113	131	137
Old 5b2	121	101	117	123
New 5b2	121	101	117	122

* September 8 base case performance was outside of EPA acceptability criteria, but this was not an exceedance day for BPA and is considered a ramp-up day.

The emission reductions for each of the strategies are shown in Table 3-4. This includes a comparison of the “old” reductions versus the revised reductions.

**Table 3-4. Comparison of Original NO_x Reductions with Revised NO_x Reductions
(Values in tpo_d NO_x)**

Scenario	Jefferson	Orange	Hardin	Total	% Reduction from base case
Old 2007 base	73.91	47.55	3.31	124.77	
New 2007 base	91.86	59.11	4.11	155.08	NA
Old 5b	70.75	45.33	1.37	117.45	5.87
New 5b	87.94	56.35	1.70	145.99	5.86
Old 5b1	43.88	30.20	1.26	75.34	39.62
New 5b1	54.68	37.54	1.56	93.78	39.53
Old 5b2	12.98	9.93	0.86	23.77	80.95
New 5b2	16.40	12.34	1.07	29.81	80.78

CHAPTER 4: DATA ANALYSIS

(No additions or revisions.)

CHAPTER 5: RATE OF PROGRESS

5.1 OVERVIEW

The BPA ozone nonattainment area was reclassified as a moderate area by the EPA, effective June 3, 1996. Under FCAA requirements for moderate areas, the state was required to submit a SIP for BPA demonstrating a 15% VOC emission reduction, net of growth, for the years between 1990 and 1996. This 15% ROP SIP was adopted by the commission on November 10, 1993 and May 13, 1994 and submitted to the EPA. Areas classified as serious and above are required by the FCAA to submit a 9% ROP SIP, achieving reductions of 3% per year, net of growth, for the years between 1996 and 1999, and every three years thereafter until attainment is reached. For these "post-96" reductions, however, NO_x reductions may be substituted for VOC reductions. Because of BPA's reclassification to moderate, the 9% ROP SIP developed for BPA was withdrawn by the state.

The BPA area did not attain the 1-hour ozone standard by the November 15, 1996 deadline for moderate areas, and also will not attain the standard by November 15, 1999, the deadline for serious areas. As part of the initial negotiations, a proposed 24% ROP was put forward to meet the requirements of EPA's Transport Policy. EPA's letter of May 19, 1999 stated that reliance on the 24% ROP alone was not sufficient for an approvable attainment demonstration, and that additional reductions would be required. As a result, the state shifted emphasis from the 24% ROP to the more stringent set of NO_x reductions to achieved by rulemaking. This SIP includes the first phase of reductions for what will ultimately required for the attainment demonstration.

CHAPTER 6: REQUIRED CONTROL STRATEGY ELEMENTS

6.1 VOC RULE CHANGES

The 1990 FCAA Amendments require each state to submit a revision to its SIP which implements RACT regulations for VOC sources in ozone nonattainment areas classified as moderate or above. Specifically, §182(b)(2) of the FCAA requires states to submit RACT regulations for VOC sources that are covered by a CTG issued after November 15, 1990 (the enactment date of the 1990 FCAA), but prior to the time of attainment. EPA is required to issue CTG guidance documents for the purpose of assisting states in developing RACT controls for sources of VOC emissions. Limits in state rules must be at least as stringent as the CTG limits or otherwise must be determined to meet RACT.

Each CTG contains a “presumptive norm” for RACT for a specific source category, based on the EPA's evaluation of the capabilities and problems general to that category. Where applicable, the EPA recommends that states adopt requirements consistent with the presumptive norm. However, the presumptive norm is only a recommendation. States may choose to develop their own RACT requirements on a case-by-case basis, considering the emission reductions needed to obtain achievement of the NAAQS and the economic and technical circumstances of the individual source.

Source categories for which the EPA was to issue CTGs under §182(b)(2)(A) include IWW and batch processes. Instead of issuing CTGs for these source categories, the EPA issued guidance documents known as ACT documents. The ACTs do not establish a presumptive norm for RACT but merely contain information on emissions, controls, control options, and costs. The EPA has consistently noted in the ACTs that each ACT "presents options only, and does not contain a recommendation on RACT." Nevertheless, §182(b)(2)(C) of the 1990 FCAA Amendments still requires states to insure that RACT is in place for all major VOC sources in moderate and above ozone nonattainment areas.

The EPA's "5.0% rule" provides a mechanism for states to justify exemptions or cutpoints which are more lenient than the EPA's RACT baseline. It is applied by determining the total emissions allowed by the EPA's RACT baseline (including exemptions) and comparing this to the emissions allowed (including exemptions) by a state regulation. If the difference is less than 5.0%, the EPA considers that there is no substantive difference between the EPA and state requirements.

Batch Process Vent Gas

The commission's position has been that the existing general vent gas rule in 30 TAC Chapter 115, Subchapter B: Division 2 is adequate to ensure RACT for batch processes; however, this is difficult to demonstrate because the necessary information for such a demonstration is not in the EI. Staff is continuing to work with BPA industries in an attempt to demonstrate equivalency between the existing general vent gas rule and the batch processes ACT using the EPA's 5.0% rule.

The commission is proposing to adopt new Chapter 115 batch process requirements (§§115.160-115.167 and 115.169) to the three-county BPA ozone nonattainment area. The rule language is based upon EPA's *Control of Volatile Organic Compound Emissions from Batch Processes - Alternative Control Techniques Information Document* (EPA-453/R-93-017, February 1994). However, if the BPA industries provide information in a timely fashion which demonstrates to the EPA's satisfaction that existing rules represent RACT for batch processes in BPA, then it will not be necessary to adopt and implement Chapter 115 rules for batch processes in BPA.

Industrial Wastewater

EPA's draft IWW CTG was modeled after the then-proposed 40 CFR 63, Subpart G (Hazardous Organic

NESHAPS for SOCOMI facilities (better known as “SOCMI HON”). All major sources of IWW emissions in BPA are at SOCOMI facilities or petroleum refineries. Four refineries, which account for 90% of the IWW emissions in BPA, are subject to 40 CFR 61, Subpart FF (Benzene NESHAPS), and 40 CFR 63, Subpart CC (Petroleum Refinery MACT). Two SOCOMI facilities (both owned by the same company) must comply with the SOCOMI HON. Initially, this company was expected to submit HON implementation plans because it planned to use emissions averaging for compliance. However, the company instead decided not to opt into averaging, and has not had to submit a Title V application yet. As a result, it is impossible to evaluate the company’s status without more information.

Staff contacted the company directly to see what information it could supply. On March 8, 1999, staff received a letter dated March 2, 1999 from the company. Of the 160 VOC process wastewater streams, approximately 90 are controlled due to SOCOMI HON or benzene NESHAPS, with the remaining 70 or so being uncontrolled. The EPA reviewed the company's letter and stated that it did not include sufficient detail to demonstrate that RACT is in place. The EPA asked for the VOC concentration and flow rate of all uncontrolled streams. Staff notified the company of the EPA's concerns and asked the company to provide the information and level of detail that the EPA requested. On April 19, 1999, staff received a follow-up letter dated April 16, 1999 from the company. Staff and the EPA are currently reviewing the information submitted in this follow-up letter. If the BPA industries provide information in a timely manner which demonstrates to the EPA's satisfaction that

existing rules represent RACT for IWW in BPA, then it will not be necessary to adopt and implement Chapter 115 rules for IWW in BPA.

6.2 NO_x RULE CHANGES

FCAA, §182(f) requires that NO_x RACT be applied to all major sources of NO_x in ozone nonattainment areas classified moderate and above. This section of the FCAA states that the requirements for major stationary sources of VOC shall also apply to major stationary sources of NO_x. However, in contrast to VOC RACT, neither the FCAA nor the EPA specify presumptive NO_x RACT limits in the form of CTGs. As required by the FCAA, §183(c), the EPA instead issued ACT documents for categories of stationary sources of VOC and NO_x that emit more than 25 tons per year. The NO_x ACTs were issued for nine NO_x point source categories: nitric acid and adipic acid manufacturing plants, stationary gas turbines, process heaters, internal combustion engines, utility boilers, cement manufacturing, iron and steel mills, glass manufacturing, and industrial/commercial/institutional boilers. These documents identify NO_x control technologies and costs, but do not establish presumptive RACT levels.

In response to the FCAA requirements, the commission adopted NO_x RACT rules effective June 9, 1993, in Chapter 117, "Control of Air Pollution from Nitrogen Compounds." These requirements apply to electric utility boilers, industrial boilers and process heaters, gas turbines, rich-burn stationary gas-fired internal combustion engines, nitric acid plants, and adipic acid plants in the BPA area.

The commission is adopting revisions to 30 TAC Chapter 117 by adding an emission limit of 3 g NO_x/hp-hr for gas-fired, lean-burn stationary internal combustion engines rated 300 hp or greater. An analysis of the agency's recent emissions inventory data indicates that about 27 lean-burn engines, operated at five major sources of NO_x in the BPA area, would be required to reduce NO_x emissions under the proposed emission limit. The existing Chapter 117 exemptions for rich-burn engines would apply to lean-burn engines as well. These exemptions include the following: engines that are employed in research, testing, emergency, firefighting, or agricultural uses (among others), or that are demonstrated to operate less than 850 hours per year. The proposed rule sets an expeditious compliance date of November 15, 2001, or approximately two years after the anticipated effective date of the rule. The commission estimates that this rule will achieve

NO_x reductions of 6.90 tpod below 1997 levels, or expressed as reductions below the projected 2007 levels, 6.80 tpod. The percent reduction is calculated by subtracting the 3 g NO_x/hp-hr emission limit from the emission factors, in g NO_x/hp-hr, used in the 1997 emissions inventory.

Phase I Rulemaking

The current SIP submittal represents “Phase I” of the state’s NO_x rulemaking activities for the BPA attainment demonstration. Under this schedule (shown in Table 6.2-1), adopted rules for lean-burn engines will be submitted to EPA by November 15, 1999. These rules achieve reductions of 6.80 tpod from the projected BPA 2007 NO_x point source emissions inventory. Table 6.2-2 provides a summary of NO_x reductions to be achieved by 2000, including reductions obtained from Phase I rules.

Table 6.2-1. Schedule for Submitting BPA SIP and Phase I Rules

Action	Completion Date
SIP and rules proposal filed with Chief Clerk	June 11, 1999
Proposal presented at commission agenda	June 30, 1999
Hearing notice published in newspapers	July 9, 1999
Proposal published in Texas Register	July 16, 1999
Public hearing	August 9, 1999
Close of 30-day comment period	August 16, 1999
Analysis of testimony	September 7, 1999
SIP and rules filed with Chief Clerk	October 8, 1999
Adoption by commission	October 27, 1999
Rule effective date	November 21, 1999
SIP and Phase I rules submitted to EPA	November 15, 1999

Table 6.2-2

**NO_x Reduction Estimates
(including Phase I rules)**

Emissions Inventory	1990	Percent of 1990 Total	Growth	2007	Percent of 2007 Total
Area sources	1.44	0.5%	-13.2%	1.25	0.5%
Point sources	221.01	78.1%	-44.8%	122.06	50.2%
Onroad mobile sources	27.15	9.6%	31.2%	35.61	14.6%
Nonroad mobile sources	33.32	11.8%	152.7%	84.21	34.6%
TOTALS	282.92		-14.1%	243.13	

	2007 Projected tpod	Reduction, tpod
EPA-ISSUED RULES		
FMVCP, Tier I, NLEV, onroad HDD	35.61	6.40
Locomotive engines	5.24	1.89
Nonroad HDD	28.42	7.73
Small engines	0.49	-0.48
Recreational marine engines	0.13	-0.10
Subtotal		15.44
TNRCC-ISSUED RULES		
FCAA NO _x RACT (compliance date 11/99)	122.06	6.10
Lean-burn engines (compliance date 11/01)	8.99	6.80
Subtotal		12.90
TOTAL		28.34

Phase II Rulemaking

As discussed in Chapter 3, modeling for the August 31, 1993-September 2, 1993 episode shows the need for more NO_x reductions in BPA in order for the area to attain the 1-hour ozone standard. Beginning in Summer 1999, the state commits to develop additional NO_x rules as needed for attainment in BPA. As shown in Table 6.2-3, these "Phase II" rules needed for attainment would be submitted to EPA by April 28, 2000. This schedule is necessary in order to coordinate rulemaking activities with the DFW SIP, which is planned for submittal to EPA by late April 2000. The APA precludes any section of a TAC chapter from being open for more than one rulemaking action at a time. Therefore, the NO_x rulemaking schedules for both BPA and DFW are being combined to meet APA requirements and to allow for more efficient use of the state's resources.

Table 6.2-3. Schedule for Submitting BPA SIP and Phase II Rules

Action	Completion Date
Rule proposal developed	September 20, 1999
Follow-up modeling completed	October 15, 1999
SIP and rules proposal filed with Chief Clerk	November 24, 1999
Proposal presented at commission agenda	December 15, 1999
Hearing notice published in newspapers	December 24, 1999
Proposal published in Texas Register	December 31, 1999
Public hearing	January 31, 2000
Close of 30-day comment period	January 31, 2000
Analysis of testimony	February 25, 2000
SIP and rules filed with Chief Clerk	March 31, 2000
Adoption by commission	April 19, 2000
SIP and Phase II rules submitted to EPA	April 28, 2000
Rule effective date	May 14, 2000