

POST-1982  
CARBON MONOXIDE CONTROL STRATEGY  
EL PASO COUNTY  
  
TEXAS STATE IMPLEMENTATION PLAN

Revise Table of Contents and Subsection VI.D. Carbon Monoxide to reflect addition of Post-1982 El Paso SIP Revisions.

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D. CARBON MONOXIDE

1. 1979 CARBON MONOXIDE SIP REVISIONS FOR EL PASO COUNTY

a. - e. (No Change)

f. Proposed Control Strategy

(Revise Table 10 to read Table 1)

2. POST-1982 CARBON MONOXIDE SIP REVISIONS FOR EL PASO COUNTY

a. General

Although the control strategy approved by the Environmental Protection Agency (EPA) on March 25, 1980 was implemented in accordance with the provisions of the plan, a portion of El Paso County did not attain the Carbon Monoxide (CO) National Ambient Air Quality Standard (NAAQS) by December 31, 1982. As a consequence, the EPA Region 6 Administrator notified the Governor of Texas on February 24, 1984 that supplemental SIP revisions would be required within one year for El Paso County.

The guidelines for the preparation of this SIP revision are contained in the Guidance Document for Correction of Part D SIPs for Nonattainment Areas published by EPA on January 27, 1984. EPA also referenced the January 22, 1981 Federal Register for 1982 SIP extension areas as supportive guidelines. These guidelines specify the procedures to be used by states in completing the Post-1982 revisions. Each affected state is to review data from air quality monitoring, compile extensive emissions data, calculate the amount of emission reductions required, identify measures available to reduce emissions, and establish legally enforceable measures for providing the required emission reductions.

b. Local Participation

El Paso County officials established the City of El Paso as the designated Metropolitan Planning Organization (MPO) for transportation planning in a resolution dated February 14, 1978. In accordance with this designation, the El Paso MPO has assisted in the preparation of the Post-1982 SIP revisions by (1) providing mobile source emissions data for El Paso and Ciudad Juarez, (2) analyzing and seeking commitments for selected transportation control measures (TCMs), (3) supporting public participation activities, and (4) performing other necessary tasks to complete the mobile source portion of the plan for consideration by the Texas Air Control Board (TACB).

The El Paso City-County Health Unit has also contributed significantly to the Post-1982 SIP revision development effort by measuring CO concentrations, participating in public information activities, and reviewing control options.

c. Air Quality Monitoring

1) Carbon Monoxide Monitoring Sites

In 1973, the TACB established a continuous monitoring station that measured CO in El Paso. The El Paso City-County Health Unit began continuous monitoring for CO in 1980. Throughout the period from 1973 to the present, monitoring has been revised and expanded. Currently, the El Paso City-County Health Unit operates one monitoring station and the TACB operates three monitoring stations which measure ambient CO concentrations in El Paso County on a continuous basis.

The monitoring station at Ascarate Park was discontinued in May, 1981, but reestablished in July, 1984. The locations of these monitoring stations are identified in Figure 1.

## 2) Review of Measured CO Concentrations

There are two national air quality standards for CO, a 1-hour standard of 40 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) and an 8-hour standard of  $10 \text{ mg}/\text{m}^3$ , neither to be exceeded more than once per calendar year. The 1-hour standard has not been exceeded in El Paso, but the 8-hour standard has been exceeded at three sites. Table 2 lists, for the period 1981 through 1984, the number of days the 8-hour CO levels exceeded the  $10 \text{ mg}/\text{m}^3$  standard at each monitoring station in the El Paso area. Table 3 lists the highest 8-hour CO levels recorded at each El Paso area monitoring station.

Table 2.

NUMBER OF DAYS CO CONCENTRATIONS EXCEEDED  $10 \text{ MG}/\text{M}^3$   
IN EL PASO COUNTY

Monitoring Site	Operated by	1981	1982	1983	1984
El Paso Campbell	City-County	10	7	6	1
El Paso Downtown	State	6	6	7	7
El Paso Ascarate	State	1	(a)	(a)	4
El Paso West	State	1	0	0	0

(a) This monitor was removed in May, 1981 and reestablished in July, 1984.

## 3) Topography and Meteorology in El Paso County

Essentially all of the metropolitan area of Ciudad Juarez and the southern portion of the El Paso metropolitan area,

Table 3.

THREE HIGHEST 8-HOUR CO CONCENTRATIONS AT EACH  
MONITORING STATION (a)

Monitoring Site	Date	Beginning Hour When 8-Hour Avg. Exceeded 10 mg/m <sup>3</sup>	8-Hour Average CO Concentration (mg/m <sup>3</sup> )	
El Paso Campbell	12/29/81	1800	17.0	
	11/11/81	1700	13.9	
	11/24/81	1700	13.9	
	11/07/82	1800	16.3	
	11/16/82	1700	14.7	
	12/18/82	1700	13.7	
	12/09/83	1500	15.8	
	12/17/83	1700	13.6	
	12/16/83	1800	13.5	
	11/02/84	1700	11.5	
	El Paso Downtown	11/24/81	1600	18.1
		12/29/81	1800	16.8
11/11/81		1800	11.3	
11/07/82		1800	14.5	
11/16/82		1600	12.8	
11/06/82		1900	12.2	
12/09/83		1500	14.3	
12/01/83		1600	13.0	
12/17/83		1800	12.8	
11/02/84		1800	16.1	
12/28/84		1400	13.6	
10/29/84		1600	12.4	
El Paso Ascarate (b)	2/14/81	2000	11.4	
	10/31/84	1900	17.7	
	10/28/84	1900	14.4	
	11/12/84	1900	13.9	
El Paso West	12/29/81	1800	11.4	

(a) Only the three highest values recorded each year are listed.

(b) This monitoring station was discontinued in May, 1981 and reestablished in July, 1984.



between Highway I-10 and the Rio Grande River, is situated in a basin formed by the river valley between mountain ranges in El Paso County and Mexico. The valley floor is some 200 feet below the elevation of I-10 as it runs through the central part of the city and is 2,000 feet or more lower than the nearby mountain peaks in El Paso and Mexico.

The importance of the terrain features becomes evident when examining the occurrence of high CO concentrations. All of the exceedances of the CO standard occur during the winter months, November through February, when the atmospheric ventilation rates are poorest and stagnation conditions result from evening and nighttime inversions, causing the air to become trapped in the valley where the three nonattainment monitors are located.

d. Choice of Reduction Model

EPA does not give any specific guidance on which emission reduction model to use to demonstrate attainment with the CO standard. If the CO exceedances result from a specific traffic problem, EPA suggests the use of the CALINE-3 model. This model calculates ambient CO concentrations that result from well defined segments of roads and intersections of roads. In El Paso County, the exceedances of the CO standard occur at three different locations in the basin, so it does not appear appropriate to use CALINE-3. The "roll-back" technique is the method available to determine the emission reduction requirement when exceedances are measured over a large area. EPA guidance also provides for a "modified" roll-back analysis which adjusts the estimated emission reduction requirement based on the possible presence of background pollutant levels.

The modified roll-back method was used to determine the emission reduction requirement for El Paso. For each monitoring site in El Paso, the emission reduction requirement was determined by calculating the percent difference between the annual second highest 8-hour average CO concentration and the standard, correcting for an estimated background pollutant level. The highest emission reduction requirement for the most recent three years from all monitoring sites was then used as the required emission reduction.

e. Emission Reduction Requirements

The high CO concentrations observed throughout the El Paso area basin occurred under conditions which indicate that emissions were contributed from both El Paso and Juarez. Therefore, the emission reduction identified by the modified roll-back method should be applied to all CO sources in the basin. However, the emission reduction requirement for El Paso is calculated based upon emissions from El Paso only, since emissions reduction requirements by the State are not enforceable in Juarez.

EPA provides general guidance for states to review the most recent three years of monitoring data. EPA has not, however, published specific guidance in the Federal Register on how many years of CO data are required to demonstrate attainment using the modified roll-back method. EPA Region 6 has decided to require the use of the highest annual second high from the most recent three-year period to determine the control requirement in this revision. While the TACB believes that using the highest second high from a three-year period, in effect, makes the standard more restrictive than was intended, this technique has been followed.

Table 4 shows the emission reduction requirements for each of the El Paso County sites for 1981, 1982, 1983, and 1984.

Based upon the 1982 data and a modified roll-back determination assuming a background level of 0.0115 mg/m<sup>3</sup>, CO emissions in El Paso and Juarez must be reduced by 28.7 percent to demonstrate attainment by 1987. This plan proposes reductions for El Paso only.

Table 4.

ESTIMATED CO REDUCTION PERCENTAGE FOR EL PASO COUNTY

Monitoring Site	1981	1982	1983	1984
El Paso Campbell	24.6	28.7	22.9	none (c)
El Paso Downtown	37.6	18.1	19.3	22.9
El Paso Ascarate	none (a)	none (b)	none (b)	27.2
El Paso West	none (a)	none (c)	none (c)	none (c)

- (a) No reduction is required if the standard is exceeded only one time during the year.
- (b) This monitor was removed in May, 1981 and reestablished in July, 1984.
- (c) The standard was not exceeded during this year at this monitoring station.

f. Emissions Inventory

A CO emissions inventory has been compiled following guidelines established by EPA. The 1982 calendar year has been used as the inventory base year.

The following subsections more completely describe the various components of the inventory and the methodology used in their determination.

1) Mobile Sources

Emissions from highway vehicles were calculated by the TACB using the EPA mobile source emissions program (MOBILE 3). Input data for speed, vehicle miles traveled (VMT), percentage of hot and cold starts, vehicle age distribution, and VMT mix was provided by the State Department of Highways and Public Transportation (SDHPT). MOBILE 3 revisions concerning tampering offsets for cold starts, light-duty gasoline truck (class 2) temperature correction factors, and exhaust gas recirculation system tampering rates have been incorporated into the program for calculating CO emissions. These corrections were received from EPA in May, 1985. The MOBILE 3 program estimated 1982 highway vehicle emissions of CO in El Paso County to be approximately 114,063 tons. In addition, the El Paso MPO estimated CO emissions from traffic idling at the international bridge crossings to be 2,824 tons in 1982. Emissions from aircraft, locomotives, and off-highway motor vehicles were estimated from data obtained from the Federal Aviation Administration, the Texas Railroad Commission, and by using EPA emission factors and the TACB area source computer program. Total CO mobile source emissions in 1982 for El Paso County were 131,520 tons. This constitutes approximately 96 percent of the county total from all source categories.

2) Minor Stationary and Area Sources

Emissions from small industrial sources (less than 100 tons per year) and area sources were estimated for each type of source from EPA emission factors, population estimates, and by using the TACB area source program. Total CO emissions from this source category during 1982 were approximately 3,271 tons per year.

### 3) Major Stationary Sources

Emissions from major stationary sources (more than 100 tons per year) were estimated from information provided by the sources in comprehensive emission inventory reports. These reports were evaluated by the TACB and entered into the 1982 data base. Emissions estimates by the Radian Corporation on the Newman Plant of the El Paso Electric Company were also included.<sup>1</sup> Four identified major CO sources emit an estimated total of 2,770 tons per year.

The El Paso County CO emissions total in 1982 from all source categories is approximately 137,561 tons per year. A more detailed inventory of all CO emissions sources is included in Appendix AI.

### 4) Ciudad Juarez, Mexico Sources

A complicating factor in the El Paso airshed is the CO emissions contribution of Ciudad Juarez, Mexico. These emissions have a presumed, but undefined, impact on El Paso air quality and cannot be controlled by Texas. The TACB, however, has developed an inventory of the emissions from Juarez. These emissions total an estimated 129,820 tons per year and are also presented in Appendix AI. The results of this analysis can be provided to the Air Pollution Work Group which will be developing an annex to the "Agreement Between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area," signed August 14, 1983.

<sup>1</sup>Radian Corporation, A Study of Ambient Air Quality and Emission Contributions to Ambient Air Pollution for El Paso County, Volume 1 (1983), p. 36.

g. Management of New Source Growth

The construction of new industrial facilities or modification of existing facilities may affect CO emission rates. Since 1972, all new or modified stationary emission sources in Texas have been required to apply best available control technology (BACT) to control emissions. Since 1979, new major sources in CO nonattainment areas have been required to control emissions to the lowest achievable emission rate (LAER) as defined in the Federal Clean Air Act. In addition, the CO emissions from new facilities emitting more than 100 tons per year must be offset pursuant to Regulation VI, Rule 116.3(a)(11) and (12). Construction of new plants and expansion of existing facilities generally cause emissions to increase but such increases are minimized through application of BACT and LAER.

h. El Paso County CO Control Strategy

1) General

Carbon monoxide emissions reductions are required by EPA for each nonattainment area which did not attain the CO standard by December 31, 1982. As discussed previously, CO exceedances occur at multiple sites in El Paso. Consequently, the modified roll-back method for determining the reduction requirement appears to be more appropriate than the use of "hot spot" techniques. It is also more appropriate to apply control measures to the whole of the county rather than to attempt to restrict them to the existing nonattainment area.

Based on 1982 CO concentrations, the modified roll-back method indicates that emissions from El Paso and Ciudad Juarez must be reduced by 28.7 percent in order to

demonstrate attainment by December 31, 1987. As a consequence, the 1982 emissions inventory for El Paso of 137,561 tons per year must be reduced to 98,081 tons per year. This results in an emissions reduction requirement of 39,480 tons, plus 2,617 tons to account for projected minor, area, and non-highway mobile source growth, by 1987. The following subsections discuss the CO reduction estimates associated with each proposed control.

2) Estimated Emission Reductions

a) Emission Reductions and Growth Unaffected  
by this Plan

Emissions projections through 1987 take into consideration changes in CO which are expected to result from population growth. Population estimates used to project emissions through 1987 were obtained from the Texas Department of Water Resources 208 Planning Section. These figures show a projected increase for El Paso County from 508,300 in 1982 to 583,500 in 1987. This population increase is expected to result in a 15 percent increase in minor and area source emissions during the period 1982 to 1987.

New industrial construction is expected to have a small impact on CO emission levels because of BACT requirements included in the state new source review program and the offset provisions of Regulation VI, Rule 116.3(a)(11) and (12).

Based on projection from the SDHPT, increases in VMT are predicted. Nevertheless, emissions from motor vehicles are expected to decrease by approximately 16.6 percent by the end

of 1987 because of the Federal Motor Vehicle Control Program (FMVCP). The effects of the FMVCP are calculated by using MOBILE 3. Mobile sources other than vehicles are predicted by the TACB area source model to increase by 15 percent.

Predicted emissions changes from 1982 to 1987 are itemized in Appendix AI.

b) Stationary Source Controls

The stationary source portion of the El Paso County CO inventory constitutes a small fraction of the total tonnage. Thus, controls on individual source categories would contribute little to the reduction requirement. For this reason, and because further controls on stationary sources were determined to be economically and/or technically infeasible, no such control measures are proposed with this plan.

c) Federal Motor Vehicle Control Program (FMVCP)

Based on information provided by the SDHPT and calculations from MOBILE 3, reductions from the FMVCP are estimated to be 19,406 tons per year by 1987.

d) Transportation Control Measures (TCMs)

An analysis of candidate TCMs for possible use in the Post-1982 SIP revision for El Paso County was performed by the El Paso MPO. Each TCM was evaluated for technical feasibility, economic reasonableness, and air quality benefit. Several measures were rejected because they were too expensive, or were politically infeasible, or they could

not be implemented by the attainment deadline. The remaining three TCMs are included in this plan. The El Paso MPO has obtained commitments from local officials and/or authorities to implement these TCMs prior to December 31, 1987. Appendix AG contains documentation of these commitments, including proposed funding sources.

The emission reductions for proposed TCMs have been determined by the EL Paso MPO and are present in Table 5.

Table 5.  
EL PASO COUNTY TRANSPORTATION CONTROL MEASURES

<u>TCM</u>	<u>Reductions Tons/Year</u>
Carpool Program-----	206
Traffic Control System Project-----	2,238
Public Transit Improvements-----	44
TOTAL	<u>2,488</u>

In addition, the annual element of the Transportation Improvement Program for El Paso County will be examined for conformity with these SIP revisions.

e) Vehicle Parameter Inspection/Maintenance  
Program (I/M)

EPA's 1984 guidelines specify that some type of I/M program will be necessary for CO nonattainment areas.

The TACB is committed to implementing a vehicle parameter I/M program. Texas Senate Bill 1205 (See Appendix X) authorizes the TACB to request that the DPS implement this I/M program in any county of the state which does not meet the national standards.

The I/M program to be implemented in El Paso County is the same in all major components as the one currently in operation in Harris County. That is, inspectors will conduct a general anti-tampering check of all 1968 and newer model year light-duty vehicles and an enhanced inspection for 1980 and newer model year vehicles to verify proper operation of the catalytic converter.

MOBILE 3 was utilized to calculate the tons of CO that the I/M program is estimated to reduce per year in El Paso County. Assuming a start-up date of January 1, 1986, the program is estimated to result in reductions of 10,097 tons of CO per year by 1987.

i. Demonstration of Attainment and Associated Implications

1) Attainment Demonstration Calculations

Modified roll-back modeling calculations indicate that the 1982 CO emissions inventory must be reduced by 28.7 percent in order to demonstrate attainment by December 31, 1987. The total CO emissions rate of 137,561 tons per year must, therefore, be reduced to 98,081 tons per year. This results in a reduction estimate of 42,097 tons per year (including 2,617 tons per year to account for projected minor, area, and non-highway mobile source growth) by 1987.

Table 6 presents the reduction estimates for each of the categories of controls previously discussed. The total emissions reductions projected to result from these control measures are not sufficient to demonstrate attainment of the

standard by 1987. The total reduction of 31,991 tons per year is 10,106 tons less than the amount needed for a demonstration of attainment, after adjustments for projected growth. These calculations do not consider any emissions changes in Ciudad Juarez, Mexico.

Table 6.  
CO EMISSIONS CHANGES FOR EL PASO COUNTY  
1982-1987

	CO Reduction		CO Increases		Net Emissions Change	
	Tons	%*	Tons	%*	Tons	%*
Federal Motor Vehicle Control Program	19,406	14.1				
Transportation Control Measures	2,488	1.8				
Vehicle Inspection and Maintenance	10,097	7.4				
Non-Highway Mobile Growth			2,139	1.6		
Area and Minor Source Growth			478	0.3		
<b>Total</b>	<b>31,991</b>	<b>23.3</b>	<b>2,617</b>	<b>1.9</b>	<b>29,374</b>	<b>21.4</b>

\* Percent of 1982 Emissions Inventory (137,561 tons).

In accordance with the January 27, 1984 EPA guidelines, emissions have been projected to 1992 and are shown in Appendix AI. Emissions are expected to continue to decrease as the result of ongoing mobile source emissions control programs.

2) Additional Requirements for Areas Not Demonstrating Attainment by December 31, 1987 and TACB Response

In the January 27, 1984 guidelines, EPA recognized that some areas might be unable to demonstrate attainment of the CO and/or ozone standards by December 31, 1987. The guidelines specify a number of additional requirements that must be met by the affected areas in order to avoid sanctions. These requirements and the TACB response to each are enumerated as follows:

a) Reasonable Available Control Measures (RACMs)

(1) States must demonstrate in each area where attainment cannot be demonstrated by the deadline that RACM's are being implemented in each of the emissions source categories.

(2) The TACB has examined the reduction potential of all CO emission source categories and has proposed the additional controls for El Paso County described previously. These controls, together with the transportation control measures obtained from the El Paso MPO and a commitment to implement a RACT I/M program, represent RACM.

b) Reasonably Available Control Technology

(1) Controls on major and minor stationary sources must exceed the level of control regarded as RACT.

(2) The TACB has evaluated the point source data base and has found that controls on major and minor stationary sources are in excess of RACT.

c) Previously Uncontrolled Source Categories

(1) Controls must be adopted for sources and source categories not currently subject to control or which exceed control techniques guideline requirements. EPA specifically addresses Stage II Vapor Recovery.

(2) The TACB has determined that there are no uncontrolled sources which could be controlled. Stage II vapor recovery controls are not applicable for CO.

d) Transportation Control Measures (TCMs)

(1) More extensive evaluation of TCMs is required. Measures previously rejected because of insufficient time for implementation before the deadline must be reconsidered, given the additional lead time.

(2) The El Paso MPO is committed to carrying out additional TCM evaluations and to seeking commitments to implement reasonable measures which, in some cases, may not be effective until after the current deadline.

e) Inspection and Maintenance Program (I/M)

(1) States are to increase the stringency and coverage of I/M to the extent feasible. EPA published guidelines on December 31, 1983 encouraging the implementation of programs to reduce the incidence of vehicle tampering and misfueling.

(2) The TACB is committed to requesting that DPS extend the State Vehicle Parameter I/M Program as now implemented in Harris County to El Paso County. Furthermore, EPA requires an approvable I/M program to be able to achieve emission credits equal to or greater than RACT. In El Paso County, based on county-specific MOBILE 3 inputs and EPA calculation methodology, the RACT emission reduction credit is 33.3 percent. The CO emission credits for the parameter I/M program, as calculated by these procedures, is 16.6 percent. The parameter I/M program, therefore, does not represent RACT, and since the 69th Texas Legislature passed enabling legislation (Senate Bill 725) which becomes effective September 1, 1985 (See Appendix AJ), the TACB is committing to request that the DPS implement an idle emissions I/M program in El Paso County. El Paso elected officials representing the city council and commissioner's court previously expressed their desire for this type of program by passing resolutions requesting that it be implemented. The addition of an idle emissions I/M program to the parameter I/M program exceeds EPA's RACT requirements. Emissions reduction estimates have not been projected since the program cannot be implemented before 1987 and specific details of the program presently have not been developed.

f) Emission Offsets

(1) Emissions offsets from major source construction or modification must exceed an amount sufficient to accommodate the growth of uncontrolled area and minor sources.

(2) The provisions of TACB Regulation VI §116.3(a)(11) and (12) will apply to major new CO source construction and modification in El Paso County. This rule provides that at the time the facility is to commence operation, a net decrease in total allowable CO emissions must result, taking into account any increases from operation of the proposed facility.

g) Continuing Studies Program

(1) The State must commit to an ongoing program for evaluating and carrying out additional control options as they become available.

(2) The TACB is committed to carrying out a continuing program of evaluating and implementing additional controls as they become available and as they are determined to be RACM.

h) Evidence for Technical and/or Economic Infeasibility

(1) States must provide evidence that rejected control measures are not economically or technically feasible.

(2) The TACB has not rejected any economically or technically feasible control measure.

j. Projection of Reasonable Further Progress

Table 7 lists the annual estimated CO emissions for mobile and stationary sources in El Paso County for the period 1982-1987. Emissions have also been projected to 1992.

Table 7.

ANNUAL EL PASO COUNTY CO  
EMISSIONS ESTIMATES

<u>Date</u>	<u>Estimated CO Emissions in Tons</u>			<u>Amount of CO Emissions Representing Linear Decrease</u>
	<u>Mobile Sources</u>	<u>Stationary Sources</u>	<u>Total</u>	
1982	131,520	6,041	137,561	137,561
1983	129,838	6,138	135,976	129,665
1984	127,689	6,233	133,922	121,769
1985	124,194	6,329	130,523	113,873
1986	117,114	6,424	123,538	105,977
1987	101,668	6,519	108,187	98,081
1992	96,127	6,996	103,123	

The total estimated CO emissions and amount of CO emissions that would represent a linear emission reduction from 1982 to 1987 are also listed. The mobile emissions estimates include linear reductions resulting from TCMs beginning in 1985. Emissions reduction estimates in 1986 for the parameter I/M program were determined by using a mid-year factor, averaging the January 1, 1986 and 1987 MOBILE 3 emission factors. FMVCP reductions were calculated using MOBILE 3. Area and minor source growth were calculated as described previously. Future emissions changes will be reported annually.

For each year, total CO emissions in El Paso County are estimated to be more than the amount of emissions that would be allowed if the required emission reduction of 39,480 tons were accomplished as a linear decrease from the 1982 baseline emissions to 1987.