Appendix F
Analysis of CO Exceedances in the South Coast Air Basin

Wintertime Oxygenate Program and the RVP Control Season.

Currently, the South Coast Air Quality Management District (SoCAB) is one of the few places in the state with violations of the federal ambient air quality standard for carbon monoxide (CO). When a district is federal non-attainment for CO the federal Clean Air Act Amendments requires the gasoline to be oxygenated for the time of the year when violations are expected. In the SoCAB this time period in October through February.

The RVP control season for SoCAB is March through October. The RVP control season and the wintertime oxygenate season overlap during the month of October. This can present a problem for refiners marketing gasoline in the SoCAB who may want to use ethanol in their fuel during the wintertime oxygenate season. California Phase 2 reformulated gasoline regulations limit the vapor pressure of gasoline during the RVP control season to 7.00 pounds. During the remaining 4 months the Phase 2 RFG regulations do not limit RVP a fuel may have. The blending of ethanol into gasoline at the levels necessary to meeting the requirements of the wintertime oxygenate program would increase the RVP of the fuel by about 1 pound. To blend ethanol into gasoline during the RVP control season a refiner must produce a very low RVP base fuel. This base fuel would have to have an RVP of less than 6 pounds. For a refiner that may wish to use ethanol during the wintertime oxygenate season this presents a problem for the month of October.

Since the SoCAB is designated as extreme non-attainment because of violations of the federal ambient ozone standard, the district is part of the federal reformulated gasoline program. This requires the gasoline to be oxygenated all year. Should California receive relief from this year-round oxygen requirement of the federal reformulated gasoline program, SoCAB would still be subject to the wintertime program. This would make it very difficult for refiner who may wish to move away from MTBE and use ethanol because it would require the refiner to produce a very low RVP base fuel for just the month of October.

To increase the flexibility for refiners to phase-out MTBE is would seem reasonable to limit the wintertime oxygenate season to just the four months of the non-RVP control season. This could be done if there are no violations of the federal ambient CO standard. The federal ambient CO standard is 9 ppm for a running eight-hour period. As of the report there has only been one violation of the federal CO standard since the beginning of 1994 and only two violations since the beginning of 1992. Both of these exceedances were recorded at the Lynwood site. This site is located in the city of Lynwood in the county of Los Angeles.

Table 1 presents the estimates of CO emissions for the Los Angeles portion of the SoCAB. Emission estimates are presented based on the EMFAC7g, the current mobile

source emissions inventory model, and the draft version of EMFAC99, the next revision to the mobile source emissions inventory model. Table 2 presents the estimated basin-wide peak CO concentration for the month of October based on the both the CO emissions inventories for an oxygenated fuel. Table 3 presents the estimated basin-wide eak CO concentration for the month of October based on the both the CO emissions inventories for an non-oxygenated fuel. The air quality estimates were made assuming air quality is proportional to either total emissions of CO or the on-road portion. Since CO is primary emitted pollutant, this assumption is reasonable.

Table 1. Winter CO Emissions in Tons/Day, Los Angeles Portion of SoCAB

Year	Total MVEI7g	On-Road MVEI7g	Total EMFAC99	On-Road EMFAC99
1997	3983.7	2779.7	9040.7	7836.7
2000	3435.3	2170.0	7728.0	6462.7
2003	3008.8	1694.8	5897.6	4583.6
2010	2402.6	1085.5	4362.0	3044.9

Table 2. October Basin-wide Maximum 8-hour Concentration With Oxygen

Year	Total MVEI7g	On-Road MVEI7g	Total EMFAC99	On-Road EMFAC99
1997	9.69	9.69	9.69	9.69
2000	8.36	7.56	8.28	7.99
2003	7.32	5.91	6.32	5.67
2010	5.84	3.78	4.68	3.76

Table 3. October Basin-wide Maximum 8-hour Concentration Without Oxygen*

Year	Total MVEI7g	On-Road MVEI7g	Total EMFAC99	On-Road EMFAC99
1997	10.66	10.66	10.66	10.66
2000	9.19	8.32	9.11	8.79
2003	8.05	6.50	6.95	6.23
2010	6.43	4.16	5.14	4.14

* CO for non-oxygenated fuel is the CO for the oxygenated fuel plus 10 percent.

Table 3 presents the estimated October basin-wide maximum 8-hour concentrations under the assumption that fleet-wide CO emission would increase by 10 percent if oxygen was removed from the gasoline. The US EPA Blue Ribbon Panel report 'Achieving Clean Air and Clean Water: The Report of the Blue Ribbon Panel on Oxygenates in Gasoline' states that older technology vehicles benefit more from the use of an oxygenated fuel than does newer technology vehicles. The assumption that CO

emission would increase by 10 percent if oxygen was removed from the fuel would be an over-estimate for future years.

Estimates of CO emission for future years consistently decrease because of the fleet-wide turn-over of older vehicles. This trend towards decreasing emissions of CO would continue whether or not oxygen was in the gasoline.