

**WORKSHOP
SUMMARY OF COMMENTS AND RESPONSES**

**OZONE ATTAINMENT DEMONSTRATION PLAN FOR THE SAN JOAQUIN
VALLEY AIR BASIN**

January 6-7, 2004

Following are the comments received during and following the January 6-7 workshops on developing an Ozone Attainment Demonstration Plan for the San Joaquin Valley Air Basin. Staff of the San Joaquin Valley Unified Air Pollution Control District (District) conducted the workshops in person in the Central Region Video Teleconference Room (Fresno), and via video-teleconference links to Bakersfield and Modesto. About 30 people attended the first workshop and about 20 attended the second workshop (January 7, 2004). Each workshop began at 1:00 pm. The comment period for these workshops ended on January 23, 2004. Participants at the two workshops made over forty verbal comments, and several other stakeholders submitted written comments.

Most comments have been paraphrased for the sake of brevity; other comments have been consolidated when similar concerns, questions, issues, suggestions, etc. were raised. The comments received (in their entirety) are available upon request at the District's Central Office. The following is a summary of the comments received, and responses prepared by District staff:

Verbal Comments:

1. **Comment:** Are you developing a plan for both the one-hour and the eight-hour ozone standards?
Response: The plan addresses only the one-hour ozone standards. As of January 2004, the U.S. Environmental Protection Agency (EPA) had not yet issued the final rule implementing the federal 8-hour ozone standard, nor have they formally designated or classified nonattainment areas. Draft EPA rule language and designation/classification information calls for an 8-hour ozone plan to be prepared in 2007 for the San Joaquin Valley Air Basin. This plan may be combined with the PM_{2.5} Plan and/or the Regional Haze Plan, which also may be due in the same general time frame. The District and the California Air Resources Board (ARB) will conduct preliminary modeling for the 8-hour standard as part of the 1-hour attainment demonstration work.
2. **Comment:** Is EPA's approval of the state's request to be reclassified as extreme nonattainment an automatic or discretionary action?
Response: Parts of the request to classify as extreme nonattainment are automatic and parts are discretionary. EPA believes that the request itself is automatic as given in language in the federal Clean Air Act. However, EPA also believes that it has discretion in specifying due dates for plans and rules under the "extreme" classification, and will invite comment on these items.

- 3. Comment:** What control measures are reflected in the emissions inventory developed for NO_x and VOC for 2000- 2010? Do they include federal standards that go into effect?

Response: The emissions inventory used to develop the ozone attainment demonstration plan includes control measures that were, are, or scheduled to be in effect for the year for which the inventory was developed. For example, the base year of 2000 will reflect control measures in effect at that time, and the future year inventory of 2010 will reflect all control measures that have been identified to be implemented by that date, provided emission reductions estimates are available for the measures of interest. This includes control measures implemented by the District, ARB, and EPA. Measures for which no estimate is available at the time of plan development may be revisited at a future date once emission reductions have been identified.
- 4. Comment:** Does the ozone plan consider emissions sources such as trucks that are allowed to enter the United States from Mexico? Does the plan also account for any federal relaxation of emissions standards?

Response: See response to Number 3 above. Any emissions estimates that change during plan development will be incorporated to the extent possible (at some point in time the inventory is locked and no further changes are considered). These changes can include new sources such as international trucks or changes in federal or state laws that increase or decrease estimated emissions from affected sources.
- 5. Comment:** Is the air quality monitoring network extensive enough to pick up anomalies such as the Crippen fire that occurred in Fresno in the winter of 2003?

Response: The monitoring network did detect emissions from the Crippen fire, which started by spontaneous combustion at the Archie Crippen Excavation site (a construction and demolition waste processing facility located in southwest Fresno). The fire burned and smoldered from approximately mid-January 2003 to mid-February 2003, and produced a cloud of smoke for several days over much of the metropolitan area. The location of anomalies such as the Crippen fire with respect to the locations of monitoring sites and the wind direction all play a role in the ability of the monitoring network to detect the effects of such events on air quality.
- 6. Comment:** Can the monitoring network identify the effects of a freeway on air quality?

Response: In general, the monitoring network is designed to provide a regional-scale picture of ambient air quality, and not to assess air quality on a micro-scale or to detect the effects of specific projects. However, in certain cases monitors may detect the air quality impacts of freeways, particularly with respect to upwind and downwind ozone levels.

- 7. Comment:** Are distributed generators (small turbines less than 10 megawatts) included in the emissions inventory and will they be included in the update?
Response: Yes, they are included in the emissions inventory as non-agricultural emissions.
- 8. Comment:** Seventeen percent of volatile organic compound (VOC) emissions comes from animal manure; have you addressed control measures such as anaerobic digestion to reduce these emissions?
Response: We are looking at anaerobic digestion as one of the control measures for confined animal feeding operations. Results from studies underway will allow us to better estimate emissions and to develop control measures.
- 9. Comment:** Should the District include emissions from fires in the photochemical dispersion modeling to help strengthen the attainment demonstration?
Response: At present, the emissions from fires are included in the baseline emissions (2000) but not in the emissions for future year attainment runs for 2010. Fires are not included in future year emissions primarily because of the difficulty in projecting the location, magnitude and duration of a fire for the year 2010. Any such projection would be extremely hypothetical and consequently would be of limited value to the planning process. For long-term consideration, the successful implementation of forest management practices should reduce the intensity of wildfires due to reduction in fuels available for burning. However, it is unlikely that substantial fuel reductions would occur within the planning horizon for this attainment demonstration.
- 10. Comment:** Does EPA allow you to exclude, from plan development, emissions from an extraordinary event such as a large-scale wildfire?
Response: EPA does have an exceptional event policy. However, the difficulty with fires in the San Joaquin Valley Air Basin (SJVAB) is that historically we have a high degree of correlation between violations of the ozone ambient air quality standard and the presence of emissions from fires. This high degree of correlation means that it is difficult to classify the fire as an "exceptional" event.
- 11. Comment:** Does CAMx do a better job than other available models of simulating the atmospheric chemistry occurring among the types of hydrocarbons emitted by the various sources in the SJVAB?
Response: The chemistry module or package actually simulates the atmospheric chemistry, so the models used for attainment demonstration can actually be customized by selecting the overall model and then by selecting the chemistry and meteorology modules for use with the overall model. For our case, the SAPRC chemistry mechanism is being used to simulate ozone production within the overall framework of the CAMx model, and it does address the individual photochemical reactivities of individual hydrocarbons.

- 12. Comment:** Is anyone working on identifying future tasks needed to characterize specific hydrocarbon emissions from specific sources?
Response: Work is ongoing to better understand the emissions inventory and the implications of the inventory for ozone levels in the SJVAB. Staff members at the District and ARB are involved, as are numerous universities, research institutes, and private firms through the Study Agency contracting process.
- 13. Comment:** The difference in isopleth diagrams for Fresno and Bakersfield is puzzling and difficult to explain. Do these results mean that the model is suspect?
Response: The results shared with you today are very preliminary, and District and ARB staff continue to make model runs to better understand the behavior of ozone formation in the SJVAB. Part of the difference may be due to different source profiles in the Fresno and Bakersfield areas. The principal activity ongoing at present that may resolve this issue is a process analysis that examines in detail how the various components of the model are performing as the model simulates ozone production in the SJVAB. Results from this process analysis may shed light on the difference in the isopleths and implications for control strategies. Modeling results appearing in the draft ozone attainment demonstration plan may differ substantially from the preliminary information presented today.
- 14. Comment:** What is causing the difference in predicted ozone levels for the Arvin and Edison monitors? Is the effect of fires causing the difference?
Response: We will continue to investigate the effects of fire on predicted ozone levels for the summer 2000 ozone episodes. The proximity of the Arvin and Edison sites leads one to expect that the isopleths should at least be similar.
- 15. Comment:** Does the modeling consider the hydrocarbon emissions from plants, and does it use results from research conducted at the University of California at Riverside?
Response: The emissions inventory used for the photochemical modeling does include biogenic hydrocarbon emissions; these data are based on research conducted at a variety of locations including U.C. Riverside.
- 16. Comment:** Tree planting has been encouraged in rural areas as a dust control measure. Has the District used the ozone model to analyze the effects on ozone production from planting trees to reduce dust emissions?
Response: The biogenic hydrocarbon emissions inventory is estimated from studies done on emissions from specific plants coupled with broad-scale maps of vegetation distribution. The biogenic emissions inventory and photochemical modeling are regional exercises that would not capture the effects of specific trees on ozone levels in specific locations.

- 17. Comment:** In the Ozone Attainment Demonstration Plan Status Report, Fleet Rules are listed in Table 1 for possible implementation in 2004-2005 for Group I (School Buses). Does the District plan to implement fleet rules for groups other than school buses?
Response: Table 2 of the Ozone Attainment Demonstration Plan Status Report lists additional fleet rules for implementation in the 2006—2007 time frame.
- 18. Comment:** For distributive generation control measures what are the cost effectiveness thresholds for NO_x and VOC? Do you have a single threshold used for all control measures?
Response: The cost analysis done for the 2003 PM₁₀ Plan had thresholds of 20 thousand dollars per ton. There are no specific guidelines for threshold levels, and thresholds are determined on a group basis.
- 19. Comment:** Is there opportunity to accelerate implementation of a given control measure (e.g., move it from Table 2 to Table 1)? The sooner it is implemented the sooner it will be achieved.
Response: The District would need more information on specific measures in order to move them from Table 2 to Table 1. For example, details on the measure, its costs, and its emission reduction effectiveness would all be used to consider moving a measure from Table 2 to Table 1.
- 20. Comment:** Monitoring results show that the violations of ozone standards occur downwind of cities, and the modeling results duplicate this pattern. However, control measures are always implemented basin-wide. Will the District develop sub-regional control measures that target the specific emissions sources located in the areas that cause or contribute to violations of the federal ambient ozone standard?
Response: As specified in the District's authorizing legislation, we will continue to implement control measures on a basin-wide basis. While some logic exists for implementing sub-regional control measures (as suggested above), their implementation could lead to possible disadvantages such as creation of "pollution pockets" with possible resulting environmental justice consequences.
- 21. Comment:** The District has reduced emissions by implementing control measures primarily on stationary sources. Continued progress in air quality improvements depends on emission controls on other sectors of the economy such as mobile sources and area sources. Perhaps other approaches to pollution control are needed if we are to have healthy air quality in the SJVAB.
Response: The District is on record as stating that emission controls from state and federal measures are needed to reduce emissions from those portions of the inventory over which the District has little or no control (principally mobile and area sources). The timing of state and federal control measures is one of the principal reasons that the District has requested that the SJVAB be designated extreme nonattainment; a classification of extreme establishes an attainment deadline of November

15, 2010, which will allow time for the state and federal measures to come into effect (starting about 2007).

- 22. Comment:** The Status Report states that adopted state and federal measures for cleaner engines and fuels are reducing SJVAB NO_x emissions by over 140 tons/day from 1999 to 2010. Is this reduction based only on motor vehicles? Does it include new control measures to be implemented in the post-2005 time frame?
Response: The figure given in the Status Report reflects adopted measures only, and is based on fleet turnover. ARB is evaluating additional control measures for implementation statewide. These future emission reductions (i.e., 2005—2010) primarily affect mobile and area sources, and are not just confined to motor vehicles. Affected source categories include ships, trucks, consumer products and others. The focus of ARB's January 13—14, 2004 SIP Summit is state emission control measures that are under consideration for implementation.
- 23. Comment:** Can the District or ARB estimate the accuracy of motor vehicle fleet turnover rate predictions for 1999—2000?
Response: In the current round of air quality planning activities, all major elements of the plan development process are thoroughly examined, including the accuracy or reasonableness of prior assumptions and predictions. To date, the accuracy of prior vehicle fleet turnover predictions has not been identified as an issue.
- 24. Comment:** In 2002, the District had a rule for Distributed Generation, but then eliminated it. The Status Report indicates in Table 2 that the District will again consider a rule for Distributed Generation, but in the 2006—2007 time frame. Compliance costs are high for stationary sources, especially when it takes five years or more to develop a rule. Stationary sources bear an unreasonable burden for reducing emissions in the SJVAB, and the District should force other source categories to reduce their emissions also.
Response: In 2002 the emission controls for Distributed Generation were found to be not cost effective, so the rule was dropped. For the 2006—2007 time frame, the cost effectiveness analysis may produce different results. The District's primary area of authority to control emissions is for stationary sources; it has very limited authority for mobile and area sources. Consequently, the District is dependent on EPA and ARB to implement control measures to reduce emissions in the mobile and area source categories.
- 25. Comment:** Is the state looking at removing pre-1988 trucks from the on-road fleet, as is being done in Phoenix, Arizona?
Response: No, but the state is looking at replacing emission control devices on pre 1996 vehicles. The state is also considering retiring old vehicles as scrap metal, thereby removing them from the on-road fleet.

- 26. Comment:** How is quality assurance done on the emissions inventory? How does ARB know that emissions from certain source categories are over-estimated or under-estimated?
Response: ARB and District staff examine the inventory in detail about every three years, emphasizing about one-third of the inventory. Source activity levels are updated, emission factors examined, and geographic distribution and timing of emissions are studied.
- 27. Comment:** What has caused the failure of prior plans? Why didn't prior ozone plans for the SJVAB result in attainment of the standards?
Response: Prior attainment demonstration plans did not result in attainment by the predicted dates for a variety of reasons, including underestimates of emissions, limitations of modeling, and actual effectiveness of emissions controls. Current ozone attainment demonstration work is using tools developed under the auspices of the Central California Ozone Study; data from this study provide the most comprehensive look at ozone behavior in the SJVAB that has been conducted to date, so many of the prior deficiencies have been reduced in magnitude if not eliminated.
- 28. Comment:** The District has done a good job of reducing emissions from sources within its authority, primarily using command and control techniques. Perhaps the next incremental improvement in ozone air quality, and attainment of the federal 1-hour ozone standard, will come from innovative control strategies that are not command and control. Is the District examining alternative strategies?
Response: The District has conducted and continues to implement alternative strategies such as voluntary programs and incentive programs to reduce air pollutant emissions. In addition, ARB's January 13—14, 2004 SIP Summit will present information on market-based and incentive strategies for reducing air pollutant emissions, some of which may be included in future SIPs or SIP revisions.
- 29. Comment:** The Rate of Progress (ROP) presentation showed a different baseline for 2002 vs. 2005, against which emissions changes were compared. Why does the baseline change depending on the ROP year? Shouldn't it stay constant?
Response: The baseline changes because the emissions subtracted for the Federal Motor Vehicle Control Program (FMVCP) and the federal Reid Vapor Pressure (RVP) programs change from 2002 to 2005. States can't take credit in their ROP calculations for emissions reductions resulting from federal measures.
- 30. Comment:** The example trend lines for area weighted exposure (AWE) and population weighted exposure (PWE) have what appears to be an anomaly in the 1996—1997 time frame in that a sharp increase in these indicators occurs. What is the cause of this anomaly?
Response: Typically fluctuations such as these in air pollution trends reflect the influences of weather patterns.

- 31. Comment:** The Department of Defense is considering increased activities at the Lemoore Naval Air Station (NAS). Will emissions from the Lemoore NAS be included in future year emissions inventories used in SIP development?
Response: Emissions from Lemoore NAS are included in the emissions inventory, included projected increases from enhanced activities.
- 32. Comment:** What leads to the decrease in base year VOC emissions; is it a back track, new calculations, new science, or new technologies?
Response: Staff members at ARB and the District continue to refine the emissions inventory. Detailed examinations of emissions estimates for source categories often identifies needed changes in parameters such as growth assumptions, control effectiveness, or number of sources. In addition, new research and testing results can change an emission factor, which in turn changes emissions estimates.
- 33. Comment:** The Central California Ozone Study conducted during the summer of 2000 was a very expensive project that produced a wealth of data. However, the data collected are already four years old. Are there plans to repeat the study at specified time intervals in the future (e.g., CCOS 2005 or CCOS 2010) to provide data for future SIP development?
Response: Staff at ARB and the Central California air pollution control districts, as well as organizations under contract through the Study Agency, continue to analyze the large volume of data collected during CCOS 2000. At present, the agencies involved have no specific plans repeat CCOS 2000 in the future; however, as the CCOS 2000 data become more dated, this matter will undoubtedly receive more attention.
- 34. Comment:** In some of the episodes presented in the modeling section, ozone levels at one location are relatively unaffected by NO_x emission reductions, whereas ozone levels at other locations are sensitive to changes in NO_x emissions. Why is this?
Response: District staff and ARB staff, in conjunction with staff from other agencies and contractors, are still studying the preliminary isopleths presented in today's workshop, with the goal of better understanding the geographic differences in the NO_x sensitivity of the ozone isopleth plots. Reasons for the differently shaped isopleths could include regional differences in ozone precursor emissions, performance of the meteorological model in distributing the emissions, or performance of the chemistry model in reacting the emissions. The effects of wildfires may also be influencing base case model runs.
- 35. Comment:** Why are ozone levels at Parlier so high? It is not a major urban area.
Response: Parlier is located downwind from Fresno, and the distance may be sufficient for the photochemistry to produce ozone by the time a given air mass reaches Parlier. Furthermore, Parlier does not have enough NO_x emissions of its own to react with ozone to help reduce ozone levels.

- 36. Comment:** Has the District correlated traffic management activities with ozone levels? In other words, do the effects of specific traffic management projects show up in ozone model runs?
Response: In general, photochemical modeling is a regional exercise done for the entire SJVAB, and is not suited to demonstrating the air quality benefits of specific projects designed to reduce emissions.
- 37. Comment:** Does the District know the schedule for developing the fleet rules shown in Table 2 in the Status Report?
Response: These rules will be developed no later than 2007; it is too early in the process to list specific milestones for developing these rules. Also, state activity in developing rules in this same area could affect the nature and extent of the District's activity in this area.
- 38. Comment:** What are voluntary programs for emission reductions? How does the District measure progress and how does the District monitor implementation from voluntary programs?
Response: Voluntary programs are those that use public education on the health hazards of air pollution and sources of air pollutant emissions to influence public behavior to reduce emissions, usually during episodes of high pollution potential. No permits, regulations, inspections, or penalties are involved in voluntary programs. Examples include Spare the Air in the summer, when the District asks SJVAB residents to curtail certain activities on high ozone days. Another example was the former winter program of "Please Don't Light Tonight," which asked residents not to burn solid wood (in fireplaces and woodstoves) on nights of limited dispersion. The District monitors the effectiveness of voluntary programs by looking at overall trends in air quality that measure the success of all of the District's programs designed to improve air quality.
- 39. Comment:** Refineries represent a small portion of the SJVAB's VOC emissions inventory, yet the District still plans additional refinery emissions control measures (Tables 1 and 2 in Status Report). Closure of the Shell Oil Refinery in Kern County will reduce this small percentage further. Is the District considering emission controls on source categories representing larger percentages of the ozone precursor emission inventories?
Response: The District's principal authority is reduction of emissions from stationary sources. The large emission reductions have been done in the last ten years. The District continues to look at refinements to rules on previously regulated sources, such as refineries. The District welcomes suggestions for additional control measures, particularly those that apply to source categories over which the District has authority.

Written comments:

1. **Comment:** The District has made progress in reducing ozone levels over time in the SJVAB, but the rate of improvement is not quick enough to meet state and federal requirements. However, we have always been successful in meeting our Rate of Progress (ROP) emission reduction goals every three years based upon our best inventory estimates. The District should analyze the geographical distribution within the SJVAB of yearly NOx and VOC emission reductions (starting in 1990) accomplished by rule implementation for each of the major source categories (mobile, stationary, area). Such an analysis may show us where and how we need to focus future control rules or land use planning so we can attain the ozone standard by 2010.

Response: The District has conducted county-by-county emissions analyses (see for example, the 2003 Ozone Air Quality Report at http://www.valleyair.org/Air_Quality_Plans/docs/O3AQReportBrdBried%20report.pdf). However, these analyses were not done as trends. For 2002, the data showed that emissions inventories in different regions of the SJVAB vary with contributions by the different major categories of emissions sources. Mobile sources dominate the total inventory in all three regions in the SJVAB, but the contribution varies; in the South, mobile sources contribute 49% of the total ozone precursor emissions, in the North, mobile sources contribute 58%, and in the Central, mobile sources contribute 60%. The District also conducted analyses using various other indices such as emissions per capita and emissions per unit area, and the rankings of the counties change depending on the index. For example, 2002 Fresno County ROG emissions exceed those of San Joaquin County (82 tons/day vs. 53 tons/day), yet ROG emissions/1000 square miles of area are 14 tons/day for Fresno County and 38 tons/day for San Joaquin County. More information can be found in the above-referenced report.
2. **Comment:** The District should use modeling to examine strategy alternatives for not only the one-hour standard but also the 8-hour ozone standards. Assuming revocation of the one-hour standard in the next year or two, it is important that any strategy be effective for both.

Response: The District is focused on meeting regulatory requirements related to the 1-hour ozone attainment demonstration plan, but remains open to conducting appropriate analyses of the effects of emissions reductions on the 8-hour ozone standard where resources allow.
3. **Comment:** Due to the very real sub-regional nature of the ozone problem, the District should develop an overall strategy that takes into account sub-region differences rather than “one size fits all” approach in their plan.

Response: The District has conducted sub-regional analyses in the past. See response to Verbal Comment # 20.

- 4. Comment:** If the District feels compelled to submit a plan based on modeling that demonstrates only minimally acceptable performance, the District should formally commit to revising the plan as better modeling becomes available, including revision of control measures if justified by the modeling. This would not be a mid-course correction, but a continuation of the ongoing effort.

Response: The District is focused on meeting regulatory requirements related to the federal 1-hour ozone standard, which in part call for the District to submit an ozone attainment demonstration plan to EPA no later than November 15, 2004. The best available information will be used to develop this plan; however, as better information is developed over time, it will be incorporated in future plan revisions. The District is committed to revisiting the federal 1-hour ozone attainment demonstration plan in 2007 (unless the standard is revoked as planned, in which case the District would focus on 8-hr ozone attainment), at which time the modeling will be repeated with new information, the emissions inventory updated, and long-term control measures identified.
- 5. Comment:** As has been made clear in statements by District staff and others, the July-August 2000 episode is not a particularly good episode for planning purposes. The need for relative reduction factors to help predicted ozone levels agree with measured ozone levels, and the presence of large wildfires, create uncertainties in the viability of this episode for control program development. The District should only use the July-August 2000 episode as a fall back (and only then if the model performance can be improved), and should seriously consider other episodes such as September 2000 or July 1999.

Response: The District will base the federal 1-hour ozone attainment demonstration plan on the best available information. Data gathered during CCOS, which includes the July/August 2000 episode, will be used where possible. Due to issues such as disagreement between actual vs. predicted ozone levels and the presence of large fires in the episode, the District is examining other episodes for use in modeling to supplement the July/August 2000 episode. These alternative episodes under study include September 2000 and July 1999.
- 6. Comment:** Performance of the CAMx model for the July/August 2000 episode is also of concern because the meteorology has been modified to improve results, and because even then the performance of the model is spotty in predicting ozone levels (modeling results meet EPA criteria in some subregions and do not in others). It should also be noted that the EPA performance metrics are not very stringent, and there are prior examples of modeling simulations that pass those metrics but still had identifiable and significant problems.

Response: The District strongly supports the need to analyze the results of the current modeling and identify the problems. The Technical Committee, districts and ARB are identifying and correcting issues associated with the modeling. The Technical Committee, districts and

ARB are developing an overall schedule for modeling improvements and implementation. Modeling will be needed for the 8-hour SIP and the 1-hour update SIP (if needed) by September 2006.

7. **Comment:** Another modeling issue is the significant difference in shapes of the carrying capacity diagrams for Bakersfield/Edison vs. Fresno/Arvin, even though these areas are not far apart. The shapes of the Fresno/Arvin diagrams are similar to what was observed in previous SJVAB modeling exercises, and show that reductions in either VOC or NOx emissions will lead to attainment. However, the diagrams for Bakersfield and Edison show that VOC is limiting in these areas, and the vertical pattern of the curves is substantially different than what would be expected, and also suggests that no ozone air quality improvements would result from NOx controls in the Bakersfield area. A related issue is that the carrying capacity diagrams for Bakersfield/Edison contradict the findings of most of the previous ozone air quality data analysis for this area. This discrepancy raises a red flag with regard to model performance.

Response: The District agrees that geographic differences in carrying capacity diagrams, as well as the departure of these new results from previous findings, warrant further study before the results are used in planning. See response to Number 6 above.
8. **Comment:** The carrying capacity diagrams presented at the workshop reflect the application of a relative reduction factor. When EPA developed the concept of the relative reduction factor, they assumed that application of the factor dealt with the non-linear nature of ozone formation over a small concentration range, and that this was acceptable. However, the current application is done over a much larger concentration range, and it is not clear whether the assumptions hold when doing this type of scaling. Based on some of the work done by Blanchard and Reynolds (JAWMA, Vol.53, 195 (2003)) to look at attainability of the 8-hour ozone standard in Central California, the efficiency of ozone production increases with reductions of NOx at the lower concentrations currently predicted by the model, as compared to the higher observed concentrations. Thus, real thought should go into use of the relative reduction factor.

Response: Relative reduction factors were included in the preliminary modeling results presented at the workshop. The District and ARB continue to evaluate the appropriateness of using relative reduction factors for the SJVAB ozone modeling, and may decide to abandon the concept of relative reduction factors for the SJVAB ozone modeling.
9. **Comment:** Significant improvements have been made in the emissions inventory over the decade; however the recent top down analysis of the mobile source inventory for the Fresno sub-region of the modeling domain suggests that heavy-duty diesel NOx emissions are underestimated by 60%. While top down analyses have uncertainties, an underestimate of

this magnitude suggests a need to reexamine the inventory from the bottom up.

Response: The District and ARB recognize that a variety of uncertainties exist with respect to the emissions inventory, including the one mentioned above. The 1-hour ozone attainment demonstration plan will be developed using the best inventory available at the time. The District and ARB will work towards identifying and resolving these inventory issues in time for the 2007 update to the 1-hour ozone plan (if needed) as well as for the 8-hour plan to be developed in the same general time frame.

- 10. Comment:** While the 1-hour plan is important, the District should also start looking at emissions reductions needed to attain the 8-hour standard. The work done by Reynolds and Blanchard indicates that while either VOC or NOx might lead to reductions of the one-hour standard, NOx reductions were much more effective in reducing 8-hour ozone (and the state one-hour ozone) standard. VOC reductions became ineffective below 100 ppb (8-hour average). Thus, the District needs to formulate a strategy that addresses both standards in an optimal fashion. To do so, it must look at the impacts on the 8-hour standard as part of this SIP.

Response: The District and ARB are focused on completing the 1-hour ozone attainment demonstration plan and submitting it to EPA by the deadline. Where possible, the modeling analyses will also look at the relationships between emissions rates and 8-hour ozone levels.

- 11. Comment:** The San Joaquin Valley may be a single air basin, but evidence exists of physical sub-regions within the district boundaries. At times these sub-regions may exhibit different emissions characteristics (e.g., the VOC emissions inventory fraction represented by mobile sources in Fresno vs. Bakersfield). Thus, "a one-size fits all" strategy may not always be appropriate. To prepare an effective one-hour (and 8-hour) emissions reduction strategy, the District should determine if different mixes of emissions reductions are the most effective means to address ozone concentrations in the north, central and southern sub-regions.

Response: As the CCOS data analyses that are now ongoing provide additional insights into ozone production and behavior in the SJVAB, the District and ARB will have an improved technical basis for identifying the existence of "sub-regions" and understanding their sources and fate of ozone pollution. At present, merely correlating emissions profiles with measured ozone levels at a particular location gives little attention to pollutant transport, which can be an important contributor; consequently, the District is reluctant to explore sub-regional controls at this time. However, the appropriate technical base may exist for the 2007 extreme plan revision and/or the 8-hour plan.

- 12. Comment:** Based on currently available data, the District should minimize future rules controlling VOC emissions and instead focus on reducing NOx emissions (unless the VOC reductions are needed for attainment with the PM2.5 standard or for air toxics considerations).

Otherwise, additional VOC reductions may satisfy the bookkeeping requirements for Rate of Progress plans, but be ineffective in an optimal ozone strategy that results in attainment of the 1-hour and 8-hour standards.

Response: Modeling results presented at the workshop, while preliminary in nature, do show that both NO_x and VOC emission reductions reduce ozone levels in the SJVAB. The District will continue to pursue both VOC and NO_x reductions for the 1-hour ozone plan.

- 13. Comment:** What controls can the District currently place on diesel engines, and what diesel controls are pending from either state or federal jurisdictions and when would they be in place?

Response: The District has no direct regulatory authority over diesel engines used either on-road or off-road; however, the District continues to use incentive programs to replace older off-road diesel engines with cleaner burning new models. The ARB (<http://www.arb.ca.gov/diesel/mobile.htm>) and EPA (<http://www.epa.gov/otaq/hd-hwy.htm> & <http://www.epa.gov/otaq/marine.htm>) regulate emissions from on-road, off-road, and marine diesel engines; most of these controls will go into place after 2005 and are expected to play a key role in improving air quality in the SJVAB by 2010.