

**Minutes of the BAAQMD 2004 SIP Modeling Advisory Committee (MAC)
Tenth Meeting**

**The tenth meeting of the MAC was held on
Tuesday, June 10, 2003, at 1:00 p.m.
at the District office, seventh floor Board Room.**

Attendees: see sign-up listing attached

Agenda: Posted with these minutes on project web site
(www.environ.org/project.html; click on "Bay Area Air Quality Management District"; enter user name and password)

Next meeting: Thursday, August 14, 2003 (1:00 pm at BAAQMD)

Presentations and handouts (all are provided on project web site):

- Agenda
- Chris Emery's presentation on project status and CAMx runs;
- Craig Tremback's presentation on meteorological results;
- Jim Wilkinson's presentation on emissions processing status;
- Saffet Tanrikulu's presentation on District work.

Discussion items:

Agenda -- No changes were suggested

Approval of minutes from last meeting – Vernon Hughes at CARB requested a clarification on a comment regarding emissions development.

Project Status Summary

Chris Emery began with a summary of the status of CCOS data (meteorology, air quality, and emissions) by episode. Resolved and new issues associated with the emissions database were listed, and further expansion on those were deferred to Jim Wilkinson's presentation.

The status of meteorological modeling was summarized next; ATMET has experienced significant problems with RAMS and MM5 model performance for the June 2000 episode. Meanwhile, ENVIRON has compared RAMS wind fields against MM5 wind fields for the July/August 2000 episode and noted that RAMS is over-ventilating the Bay Area each day, while MM5 appears more stagnant. ENVIRON has directed ATMET to drop the June 2000 modeling and focus on improving the RAMS

July/August 2000 simulation. The June 2000 episode may be dropped entirely from consideration.

Chris Emery summarized the results of numerous CAMx sensitivity runs undertaken in May, mostly focusing on sensitivity to meteorological inputs. Introduction of MM5 fields (to replace RAMS) over the July/August 2000 episode did improve ozone performance, but not entirely to the level necessary for use in SIP analyses. Issues with both emissions (e.g., VOC:NOx ratios and temperature-sensitive sources) and meteorology (e.g., winds, PBL depths) were noted.

Meteorological Modeling

Given time constraints, the meteorological presentation from ATMET was skipped. However, this presentation is available on the project web site. It mainly details the problems encountered in modeling the June 2000 episode, and describes various attempts to improve the performance of the simulation. This episode may be dropped from consideration.

Emissions

Jim Wilkinson presented the current status of the July-August 2000, the June 2000, and the July 1999 emissions inventories for use in CAMx air quality modeling. Since the last MAC meeting, the ARB delivered revised CB-IV and SAPRC99 speciation profiles. Further, the ARB delivered the new temperature and relative humidity fields based on an objective analysis of the observed values coupled with MM5 results, which were treated as pseudo-stations. ARB also announced during the meeting that the July 1999 temperature and relative humidity fields were available.

Efforts to integrate new commercial marine shipping emissions are on-going. In order to gauge the impact of day-specific commercial marine travel on the emissions estimates, the project team will estimate new commercial marine shipping emissions based on Dr. Bob Bornstein's work for the July-August 2000 episode during the early part of July.

Mr. Wilkinson indicated that the project team was conducting quality assurance checks on the new emissions estimates. He presented the current summary of the emissions estimates for each episode. These QA checks were presented in tabular form to the MAC. Mr. Wilkinson indicated that he still had concerns in regards to the episodic comparison of the emissions (e.g., EGU NOx emissions in July 2000 were about a factor of three higher than the EGU NOx emissions in June 2000 and July 1999). The project team will continue to work with the ARB to determine if these issues are relevant problems.

Mr. Wilkinson also reported the magnitudes of the biogenic emissions estimates for the Bay Area. In the nine county Bay Area, biogenic NO were reported to be 18 tons per day and biogenic VOC were reported to be 1,003 tons per day. There were concerns

raised by the MAC that these were simply too high. Staff from the BAAQMD reported that they were used to BVOC emissions in the range of 300-500 tons per day, and other MAC members were concerned that the BNO emissions should be lower. Mr. Wilkinson stated that he would review these emissions estimates under the assumption that he misstated the magnitudes. (Shortly after the meeting, Mr. Wilkinson checked the biogenic emissions estimates and discovered an error. The BVOC emissions for the new ARB-provided biogenic inventory are 436 tons per day. The BNO emissions estimate that Mr. Wilkinson prepared is actually 9 tons per day [half that reported in the MAC meeting].)

It now appears that the refining industry, the BAAQMD, and the ARB are in agreement as to the magnitude of the emissions from refinery-related operations as well as the stack parameters associated with the flares.

The project team is still investigating temperature effects on evaporative emissions from storage tanks, marine loading, and the like.

Mr. Wilkinson reported that there existed problems in the processing of the day-specific sources. These problems should be corrected within a week.

In addition, he reported potential problems with the new CB-IV profiles. In general, the new CB-IV profiles drop an unusually large portion of the TOG mass (90% in new versus 97% in old) though in some profiles, mass is actually greater than 100%. Also, some CB-IV profiles were missing altogether. The new SAPRC99 profiles do not have this problem. The study team expects to correct these problems within a week.

Mr. Wilkinson also reported that QA on the new biogenic emissions estimates is ongoing. The new biogenic emissions are 50% less than previous estimates, and it is unclear why these emissions are lower. The study team will work with ARB to determine what, if any, problem exists.

District Work

Saffet Tanrikulu summarized the various tasks that the District has carried out over the previous month. The District has taken over the processing and QA of CCOS meteorological and air quality data (both surface and aircraft) for the July/August 2000 episode. The staff has also begun reconciling the differences in CAMx performance between ENVIRON's and UCR's simulations of this episode. UCR results in the Bay Area are much closer to peak observations than ENVIRON's. The differences in various inputs were listed. District staff were able to replicate UCR's simulations, and then incrementally changed out various CAMx input files (landuse, photolysis rates, etc.) with ENVIRON's files to find the key component that explains the differences. Since UCR utilized a different methodology to process emissions to model-ready formats, the ENVIRON/AG and UCR emissions were compared; no significant differences were found.

Differences between RAMS and MM5 meteorology is an important factor in the differences between UCR and ENVIRON results, but are not sufficient to explain the entire difference. The other key input is boundary conditions; ENVIRON has been using clean background values from OTAG (based on the lack of information available to date from CCOS), while UCR has been using higher boundary condition values from SARMAP. Previous tests undertaken by ENVIRON with higher ozone boundary conditions (60 ppb vs. standard 40 ppb) do show strong sensitivity to the choice of boundary ozone, especially on the western side of the domain.

Topographic resolution of the Bay Area probably plays a significant role (as seen in 1-km high resolution RAMS simulations earlier in the project). The District feels that MM5 is under estimating the northerly airflow along the I-680 corridor (from Concord to Livermore). Eastward ozone transport through the Delta region is likely over stated.

Further evaluation of the emission inventories and additional investigative simulations are planned.

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Bay Area Modeling Advisory Committee 6/10/03

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