

SOUTHEAST TEXAS PHOTOCHEMICAL MODELING TECHNICAL COMMITTEE

Meeting Summary
November 20, 2008

H-GAC Offices
3555 Timmons Avenue
Houston, Texas

Members and Guests Present:

Susan Moore, Bruce Davis, Rohit Sharma, Graciela Lubertino, Shelley Whitworth, Kelli Angelae, Connie Chao, Erik Snyder, Wei Zhou, Jim Smith, and Dick Karp, and Liz Hendler, and Lola Brown via telephone.

SIP Planning and Implementation Update – Lola Brown (TCEQ)

Lola gave a brief update via the telephone. For questions or more information, please contact Lola at lbrown@tceq.state.tx.us.

Lola reported that the HGB Eight-Hour Ozone SIP Stakeholder Group meeting was held on November 3, 2008, to discuss the initial 2018 HGB modeling results. The meeting included updates on the development status of the next SIP revision and a report from H-GAC regarding potential local mobile control strategies. The presentations, handouts, and meeting summary have been posted on the TCEQ's Web site:

http://www.tceq.state.tx.us/implementation/air/sip/hgb_stakeholder.html

Lola also mentioned that the executive director's recommendation regarding the designations and the new (2008) eight-hour ozone standard (75 ppb) will be presented to the TCEQ commissioners at the December 10 agenda meeting. The supporting documents have been posted on the TCEQ's Web site

(<http://www.tceq.state.tx.us/implementation/air/aqps/eighthour.html>).

H-GAC Update – Graciela Lubertino, Ph.D. (H-GAC)

(Note: Graciela's presentation is available on the SETPMTTC Web site:

http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html).

Graciela gave an update on the continuing efforts to identify and quantify control strategies for on- and off-road mobile source categories. H-GAC has been conducting stakeholder meetings with representatives from local governments, airports, marine ports, railroads and the construction industry. These meetings have addressed the use of TERP for marine vessels, locomotives and construction vehicles. H-GAC will be submitting a draft short list of recommended on- and off-road mobile source control measures to the TCEQ on December 5, 2008. The final short list and technical reports are due to TCEQ by February 20, 2009.

Graciela also reported that H-GAC staff is continuing to work on the 2002, 2008, 2011, 2014, 2017 and 2018 RFP emission inventories for the HGB RFP SIP. H-GAC has completed the calculation of the VMT for each of the target years and is awaiting further guidance from the

TCEQ on the use of other emission parameters, such as the VMT mix, ambient temperatures and humidities. Since the due date for the RFP emission inventories is the end of January 2009, Graciela asked TCEQ staff to check on the schedule for providing the guidance. (note: subsequent to the meeting, TCEQ mobile source emissions staff indicated they would be providing the necessary guidance very soon.)

Graciela also indicated that two Portable Emissions Measurement System (PEMS) studies will be conducted. One is on high emitting diesel vehicles (i.e., HDDV2b, HDDV6, and HDDV8b), which will be done in collaboration with TxDOT, TTI, TSU, and H-GAC. The other PEMS study is on drayage trucks, which are typically used at shipyards to ferry containers. This study will be conducted in collaboration with EPA, TCEQ and the Port of Houston. Graciela was asked about the emissions from drayage trucks being in the on-road mobile source inventory. She responded that although the drayage trucks do travel on the roadways, they are operated more in the shipyards. In addition, their operation within the shipyards can involve quite a bit of idling. Thus, the bulk of their emissions are not accounted for in the mobile source emissions inventory. The results of these studies will be used in the development of MOVES.

EPA SIP Related Update – Erik Snyder (EPA)

Erik Snyder gave a verbal update of current SIP related issues. For questions or more information, please contact Erik at snyder.erik@epa.gov.

Erik reported that the EPA Region 6 administrator (Mayor Greene) has indicated he will be leaving January 20, 2009. Larry Starfield will be the acting administrator until the position is filled. Erik indicated that he has not heard of any likely candidates and that it could take up to several months to fill the vacancy.

Erik indicated that the response to comments for the DFW SIP are currently being reviewed and EPA is hopeful that they will be able to post the final approval in the Federal Register before the end of the year (2008). Erik mentioned that nationally, EPA still has not received suitable SIP submittals from a number of moderate areas, including New York City and Philadelphia. In the case of the multi-state New York City nonattainment area, the state of New York has requested a bump-up, but the state of New Jersey does not want a bump-up. In the case of the Philadelphia nonattainment area, they have not been able to demonstrate attainment.

Erik mentioned that the proposed implementation rule for the new ozone standard (75 ppb) will likely include alternative classification schemes for which EPA will request comments. In addition, EPA will also use the implementation rule to request comments on the modeling guidance. EPA hopes to post the proposed rule in the Federal Register in late spring or summer of 2009.

Erik reported that non-CAIR IPM modeling runs have been made for 2010 and 2015. EPA is currently reviewing these runs, however Erik did not expect any decision to be made on their utility for regional haze and ozone modeling before the end of the year. EPA had requested the court reconsider the CAIR vacatur, to which they appear receptive.

Erik also reported that the change in the lead (Pb) standard has resulted in an issue for Collin County. This appears to be due to a battery recycling facility.

SIP Modeling Update: 2006 Base Case Modeling vs TexAQS II Monitoring – Jim Smith, Ph.D. (TCEQ)

Prior to Jim's main presentation, he presented some corrected time series and scatter plots of modeled versus monitored ethene (ETH), olefin (OLE) and internal-olefin (IOLE) for the initial base case modeling of the 2006 TexAQS II episodes. The procedure for converting the ambient auto-GC VOC measurements to CB05 species, is based on the VOC concentrations being in ppbv units. Inadvertently, the original files with VOC concentrations were in units of ppb-C. Jim's presentation from the previous meeting (October 7, 2008) has been corrected.

(http://www.tceq.state.tx.us/assets/public/implementation/air/am/committees/pmtc_set/20081007/20081007-smith-hgb_modeling_update.pdf).

Jim also addressed a question raised at the previous meeting concerning the vertical height of the modeled winds used in the plume plot trajectories. Subsequent to the previous meeting, it was determined that the modeled winds being used were those simulated at the mid-height of the first model layer (i.e., ~17 meters) rather than at probe-height (i.e., 10 meters). TCEQ is currently changing the procedure for developing the plume plot trajectories to use the modeled probe-height winds, which will provide a more valid comparison with the plume plot trajectories using monitored winds. Jim indicated that when these revised plume plot trajectories are available, we will be presenting them.

Jim presented comparisons of the base case modeling for the 2006 TexAQS II episodes and ambient measurements collected by the NOAA Twin Otter aircraft (Note: Jim's presentation is available on the SETPMTC Web site

http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html). In particular, Jim presented comparisons between ozone and PBL measurements from the downward directed Lidar instrument (i.e., TOPAZ – Tunable Optical Profiler for Aerosol and Ozone) and the corresponding modeled ozone concentrations and diagnosed PBLs. Jim also presented some comparisons between ozone, formaldehyde and NO_y measured with instruments on the NOAA P3 aircraft and the modeled concentrations.

Questions and comments that arose during Jim's presentation included:

- How do the TOPAZ ozone measurements correlate to the surface monitoring ozone concentrations?
- How can the 1-minute averaged TOPAZ ozone measurements be compared with the hourly averaged modeled concentrations?

Regarding the correlation of the TOPAZ ozone measurements with those from the surface monitoring sites, Jim indicated that the TCEQ has not made any of those types of comparisons. However, Jim did think comparisons between the aircraft and surface sites was worthy of consideration and TCEQ would look into making those comparisons.

Regarding the comparison of 1-minute averaged TOPAZ ozone measurements with the hourly averaged modeled concentrations, Jim described the process that was used to "fly" the aircraft

through the modeled concentrations: the point in space and time representing the midpoint of each one-minute observation period was located within the modeling grid and the modeled value in that grid cell was extracted and compared with the observation. Jim acknowledged that there are always commensurability issues when comparing short duration point measurements with modeled hourly, volumetrically averaged concentrations.

Jim concluded his presentation, noting that TOPAZ data provides an extremely useful tool for evaluating model performance. In particular, using TOPAZ and other data, it has been possible to diagnose the CAMx model ozone performance issue on August 31, 2006, as being due to a modeled wind bias, which displaced the modeled plume of high ozone to the south and west of the monitored plume.

SIP Modeling Update: On- and Non-Road Emission Modeling – Dick Karp (TCEQ)

Dick presented an update for the on- and non-road modeling emissions (Note: Dick's presentation is available on the SETPMTTC Web site

http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html).

At the previous SETPMTTC meeting (October 7, 2008), Jim Wilkinson with Alpine Geophysics, representing the 8-Hour Coalition, presented information concerning issues with the on- and non-road modeling emissions

(http://www.tceq.state.tx.us/assets/public/implementation/air/am/committees/pmt_set/20081007/20081007-wilkinson-near_term_modeling_support_sip.pdf).

Prior to that meeting Jim and TCEQ staff discussed the issues and TCEQ staff have subsequently addressed those issues. In particular the issues concerned an error in the spatial distribution of the on-road mobile source link-based modeling emissions in the HGB area, and the use of the "urban" land-use category as a surrogate for spatially distributing non-road mobile source construction equipment emissions. The TCEQ obtained corrected geographical coordinates for the roadway links and reprocessed the on-road link-based modeling emissions. The TCEQ also developed a more appropriate surrogate for spatially distributing non-road construction equipment emissions combining the commercial, residential and industrial land-use categories. In addition to addressing these issues, the TCEQ has also updated the non-road mobile source modeling emissions by using the new TexN non-road model developed by ERG, designed especially for Texas.

Dick showed the changes to the on- and non-road modeling emissions resulting from these revisions. In addition, he showed the resulting changes to the base case modeling (i.e., June 2005 episode).

Dick concluded his presentation indicating that although the revisions to the emissions are very appropriate, they resulted in only minor changes in the CAMx modeling results.

SIP Modeling Update: Retrospective Modeling: Back-casting 2000 Baseline Design Values – Jim Smith, Ph.D. (TCEQ)

Jim presented a diagnostic evaluation (i.e., retrospective modeling), which demonstrates the accuracy of the model's response to changes in emissions. (Note: Jim's presentation is available on the SETPMTC Web site

http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html).

In particular, this application of retrospective modeling applies the relative response factor (RRF) concept for projecting future year design values, to projecting a historical year (i.e., back-casting), in this case the year 2000. Jim showed comparisons between the observed 2000 baseline design values (i.e., the average of the monitored design values for 2000, 2001 and 2002) and the model projected 2000 baseline design values. Jim also showed comparisons between RRFs calculated from the ratio of the observed 2005 to 2000 baseline design values, and the modeled RRFs.

Questions and comments that arose during Jim's presentation included:

- How do the changes in the meteorology between the two 3-year period, 2000, 2001 & 2002, and 2005, 2006 & 2007, affect the baseline ozone design values?

Jim acknowledged that a significant difference in meteorology between the two periods could influence the baseline ozone design values to a degree that may be comparable to the difference in the emissions between the two periods. However, Jim indicated there is no evidence that the meteorology has changed significantly between the two periods. In addition, Jim pointed out that for this retrospective ozone modeling, the 2005 and 2006 episodic meteorology was used with both the 2005 baseline modeling emissions and the 2000 baseline modeling emissions, and the favorable comparison between the observed and projected 2000 ozone design values would suggest the meteorology between the two periods may not be notably different.

Concluding Discussion

After the conclusion of the presentations, there were a few questions and comments including:

- How can the most recent (2008) ozone design value be taken into account in the SIP modeling?
- What effect has gasoline price had on mobile source emissions and in turn on ozone concentrations?
- What effect has the increased traffic due to the relocation of victims from hurricanes Katrina and Rita had on mobile source emissions and in turn on ozone concentrations?

Erik Snyder (EPA) responded to the question about incorporating the 2008 ozone design value in the SIP modeling. Erik indicated that probably the best way to include the 2008 HGB design value was with weight of evidence, showing the trend of lower ozone design values over the past several years. Erik mentioned that the ozone design values throughout Texas were incongruously low for both 2007 and 2008, and that EPA was concerned that this may be due, in large part, to more favorable meteorology.

Concerning gasoline prices, the consensus of the discussion seemed to be that it most likely reduced the traffic during this past summer. And the resulting lower on-road mobile emissions may have contributed some to the lower ozone concentrations.

Concerning the hurricane-related relocations, the consensus of the discussion seemed to be that this may have increased traffic congestion. Increased traffic congestion and the resulting emissions, especially during the morning hours on days with meteorology conducive to ozone formation, may contribute to higher ozone concentrations.

Dick adjourned the meeting, thanking participants for their attendance, and indicating that the next meeting is scheduled for January 22, 2009. Dick also indicated that monthly meetings have been scheduled for the first few months in 2009. The 2009 meeting dates are posted on the SETPMTTC web site (http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html).