

## **SOUTHEAST TEXAS PHOTOCHEMICAL MODELING TECHNICAL COMMITTEE**

Meeting Summary  
August 23, 2011

H-GAC Offices  
3555 Timmons Avenue  
Houston, Texas

### **Members and Guests Present:**

Dan Baker, Susan Moore, Marise Textor, Dan Cohan, Barry Lefer, Qiang Xu, Jian Zhang, Ken Gathright, Judy Bigon, Paul Petitt, John Dege, Bruce Davis, Rohit Sharma, Graciela Lubertino, Ryan Perna, Erik Snyder, Dave Westenbarger, Marissa Gonzales, Jim Smith and Dick Karp, and via telephone Lola Brown, Ron Thomas, and Chris Rabideau.

All presentations are available on the SETPMTTC Web site, [http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc\\_set.html](http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html).

### **SIP Planning and Implementation Update – Lola Brown (TCEQ)**

Lola gave the following verbal update via the conference telephone. For questions or more information, please contact Lola at [lola.brown@tceq.texas.gov](mailto:lola.brown@tceq.texas.gov).

The EPA responded (letter dated July 25, 2011) that it was unable to propose approval of TCEQ's 185 fee termination determination request, since the area has not yet attained the one-hour standard. In addition, EPA alluded to the July 1, 2011, District of Columbia Circuit Court of Appeals vacating of EPA's guidance memo relating to attainment of the eight-hour standard as being satisfactory for terminating 185 fees, and to the preliminary 2011 monitoring data indicating the area is not attaining the eight-hour standard. Lola was asked what the TCEQ's next steps would be and responded that Kathy Pendleton ([Kathy.Pendleton@tceq.texas.gov](mailto:Kathy.Pendleton@tceq.texas.gov)) is the TCEQ contact person for additional information.

The hearing transcripts and public comments on the HGB RACT SIP revision are available on the TCEQ Web site (<http://www.tceq.texas.gov/airquality/sip/hgb/hgb-latest-ozone>).

The TCEQ staff is currently reviewing the Cross-State Air Pollution Rule (CSAPR) published in the Federal Register on August 8, 2011 (76 FR 48208). CSAPR requires 27 eastern states, including Texas, to reduce electric generating utility emissions that contribute to ozone and PM<sub>2.5</sub> pollution in other states.

A Texas low emission diesel (TxLED) Stakeholder Group meeting has been scheduled for September 1, 2011, at the TCEQ Headquarters in Austin to solicit stakeholder input on potential revisions to the regulations governing the TxLED Program. In particular,

revisions to TxLED rules ([Rule Project No. 2009-001-114-EN](#)), an item that was removed from the August 3, 2011, Commissioners' Agenda.

The TCEQ 2010 Flare Study final report and all other documents related to the study are available on the Flare Task Force Stakeholder Group Web page, under the TCEQ 2010 Flare Study section ([http://www.tceq.texas.gov/airquality/stationary-rules/flare\\_stakeholder.html](http://www.tceq.texas.gov/airquality/stationary-rules/flare_stakeholder.html)).

The following items are scheduled for the October 5, 2011, Commissioners' Agenda. These documents will be available on the Agenda Meetings and Work Sessions Web page (<http://www.tceq.texas.gov/agency/agendas/agenda.html>) September 16, 2011.

- Proposal to repeal 30 TAC Chapter 101, System Cap Trading Program and Revisions to 30 TAC Chapter 117 (Rule Project No. 2011-018-101-EN).
- Adoption of the General Conformity Rule Repeal (Project No. 2010-047-101-EN) and the General Conformity SIP Revision (Project No. 2011-002-SIP-NR).
- Adoption of the Lead Infrastructure SIP Revision (Project No. 2011-016-SIP-NR).

### **H-GAC Air Quality Issues – Graciela Lubertino, Ph.D. (H-GAC)**

Graciela gave a verbal update. For questions or more information, please contact Graciela Lubertino at [graciela.lubertino@h-gac.com](mailto:graciela.lubertino@h-gac.com).

She reported that H-GAC was still involved in modeling mobile source (link-based) green-house-gas (GHG) reductions.

Graciela asked Dick to discuss the issue concerning the use of the MOVES on-road mobile source emissions factor model for conformity to a motor vehicle emissions budget (MVEB) developed with the MOBILE6.2 on-road mobile source emissions factor model.

Dick explained that with the 2011 ozone design value for the HGB area expected to be only slightly above the 1997 standard and with the delay in revising the 2008 standard, the Mid-Course Review (MCR) and next attainment demonstration SIP for the HGB area, which would provide a future year MVEB developed with MOVES, may not occur until 2015 or 2016. However, H-GAC will have to begin conducting conformity analyses with MOVES no later than March 2013, presuming EPA extends the grace period, during which MOBILE6.2 can be used, by one year. The current MVEB (i.e., based on MOBILE6.2), which was deemed acceptable for conformity purposes by EPA as a part of their review of the April 2010 HGB SIP, is approximately half as much as the estimated 2018 MVEB based on MOVES. Therefore, it seems almost certain that using the MOVES model to estimate future on-road mobile source emissions for conformity will result in emission estimates in excess of the current MVEB (i.e., based on MOBILE6.2). Staff from H-GAC and the TCEQ met recently with EPA Region 6 staff to explore possible approaches for establishing in a timely manner a MOVES-based 2018 MVEB for the HGB area that EPA could deem appropriate for conformity purposes. Currently no decisions have been made, although H-GAC and the TCEQ staff are exploring options.

Graciela and Dick were asked about the length of the MOVES grace period, and responded that EPA had indicated that a one-year extension from March 2012 was likely the maximum. Dick was asked about the MCR and responded that commencing with a MCR at this time would not be timely enough since it would be 2014 before a MCR SIP revision with a MOVES-based 2018 MVEB could be submitted.

### **EPA SIP Related Update – Erik Snyder (EPA, Region 6)**

Erik gave a verbal update. For questions or more information, please contact Erik Snyder at [snyder.erik@epa.gov](mailto:snyder.erik@epa.gov).

Erik reported that EPA had submitted the proposed revision to the 2008 ozone NAAQS to the Office of Management and Budget (OMB) July 15, 2011, but as far as he knew, EPA has not received any word as to when the NAAQS revision will be released. Erik was asked about the possibility of preparing SIPs for the 75 ppb NAAQS, if there is no change in the NAAQS, or if the revision gets delayed until the next required review in 2013. Erik responded that he hadn't heard anything about waiting until 2013. Erik was also asked if EPA would have to conduct a review in 2013 anyway and responded that it would be up to the Office of General Council (OGC) whether a new clock was started for the ozone NAAQS review. (note: subsequent to this meeting, EPA withdrew their proposal to revise the 2008 NAAQS, so the current ozone standard is 75 ppb.)

Erik indicated that EPA plans to share the source apportionment modeling they conducted for the transport rule with states to assist in designating ozone nonattainment areas. Erik was asked whether this meant EPA was going to do the designations. Erik responded that the source apportionment modeling is only meant as a guide for states to use, but states will still do designations. Erik also indicated the recommendations for the 2008 NAAQS (75 ppb) were submitted but EPA did not finalize them, since they expect to receive recommendations for designations based on the revised NAAQS.

Erik was asked about the schedule for submitting SIPs for the revised NAAQS, and responded that EPA was hoping to expedite the designation process to less than two years so SIPs could be submitted by 2015 or 2016, since the apportionment modeling is being provided by EPA to help expedite the designation process. Erik was asked about some of the details of the modeling used for the transport rule. Erik explained that the source apportionment modeling is by groups of counties (i.e., the source regions), the base year is 2005 and the eastern U.S. domain uses 12 x 12 km grids.

In regards to the transport rule, Cross-State Air Pollution Rule (CSAPR), Erik indicated the target date for finalizing the 2012 state budgets is September 1, 2011 (i.e., supplemental notices). In addition, Erik indicated CSAPR 2012 emission caps (i.e., state budgets) were based on CAIR phase 1, and since existing EGUs had already applied controls for CAIR phase 1, no additional controls would be needed until 2015 or 2016 when CSAPR phase 2 is required. Erik further indicated that the CSAPR phase 2 limits would be based on the revised ozone NAAQS and also apply to additional point sources. It was pointed out by several participants that Louisiana has not been able to meet CSAPR 2012 emission caps with CAIR allocations. Erik and TCEQ staff were asked if

any EGUs in Texas have been identified that have shortfalls in achieving CSAPR 2012 limits. Neither, Erik nor TCEQ staff knew which EGUs, if any, were not going to meet the CSAPR limits by January 1, 2012. (note: subsequent to the meeting a number of EGUs in Texas have notified the TCEQ and EPA that they will not be able to meet their 2012 CSAPR allocations.)

Erik was asked about new particulate matter (PM) standards and if there is a range, similar to that for the revised ozone standard. Erik answered that as far as he knew no new PM NAAQS was being readied for proposal and as far as ranges for PM<sub>2.5</sub>, Erik indicated that the lower levels previously discussed were 30 µg/m<sup>3</sup> and 12 µg/m<sup>3</sup> for the 24-hour and annual, respectively.

Erik reported that the review of the CO NAAQS resulted in no change to the primary standard (i.e., 35 ppm one-hour and 9 ppm eight-hour), although there are changes to the monitoring requirements. These changes include updating the federal reference method (FRM) and co-locating CO monitors with near-road NO<sub>2</sub> monitors.

Erik also reported that settlement agreements on law suits concerning regional haze SIPs have resulted in EPA Region 6 preparing federal implementation plans (FIPs), in particular for BART sources in Oklahoma and New Mexico.

In addition, Erik indicated that the SO<sub>2</sub> guidance for maintenance SIP modeling is awaiting approval but should be published soon. Erik was asked about a possible delay in the 10th Modeling Conference, scheduled for October 24-26, 2011, due to the deadline for submitting comments on the guidance. Erik checked and at the time, there was not going to be a delay. (note: subsequent to this meeting, EPA did re-schedule the Modeling Conference for March 13-15, 2012.)

### **H-NET Monitoring Update – Barry Lefer, Ph.D. (University of Houston)**

Barry presented an update of the ambient air quality monitoring from the H-NET sites for 2011. For questions or more information contact Barry at [blefer@uh.edu](mailto:blefer@uh.edu).

Barry's presentation included some recent (e.g., past 10 years) trends in ozone metrics (e.g., peak ozone, number of exceedance days) for the HGB area. Barry was asked whether the areal extent of exceedances has also decreased and responded that the plumes of high ozone appear to be getting smaller, more toward the size of a neighborhood.

Barry's presentation also compared 2011 temperature and precipitation to long-term normals, as well as the number of exceedance days (i.e., based on the 75 ppb standard) by month in 2011 to the monthly distribution of exceedance day for the 2000 to 2010 period. For most if not all of Texas, and the HGB area in particular, so far the 2011 ozone season has been notably hotter and drier than normal. Coincident with the hotter temperatures and lower precipitation, the number of exceedance days in HGB for 2011 has been lower than normal.

Barry indicated that this fall, they will be adding to the H-NET enhanced CO monitors at all five sites, a 5-meter sampling elevation, complementing the 70-meter elevation at the Moody Tower site, and a trace level SO<sub>2</sub> monitor at the Moody Tower site. In addition, the University of Houston plans to provide real-time ozone mapping using the TCEQ 5-minute ozone data overlaid on Google maps.

Barry was asked why the H-NET monitors often measure higher ozone concentrations than the TCEQ monitors. Barry responded that since the Moody Tower is at 70 meters and the Jones Forest monitor is at 20 meters, they will typically measure higher ozone concentrations.

### **Review of the Ozone NAAQS and Update – Marissa Gonzales (TCEQ)**

Marissa presented a review and update of the 2008 ozone standard and the various levels being considered for the revision. For questions or more information contact Marissa at [marissa.gonzales@tceq.texas.gov](mailto:marissa.gonzales@tceq.texas.gov).

Marissa presented a graphic showing that monitors in 5 of the 9 DFW counties and 2 of the 8 HGB counties had a 2010 eight-hour ozone design value greater than 75 ppb (i.e., 2008 NAAQS). She also presented similar graphics depicting the counties with monitors having 2010 eight-hour ozone design values greater than 70 ppb, 65 ppb and 60 ppb.

During Marissa's presentation a question about the Wallisville monitor status was asked. The TCEQ staff responded that they were aware of EPA's letter indicating the need for the TCEQ to include the monitor as regulatory, but did not know the status of a response.

During Marissa's presentation there was also a question about using modeling to estimate the ozone design values in counties without monitors, in particular, whether the recent EPA modeling for CSAPR, which includes Texas, could be used. The TCEQ staff responded that they would need to review the EPA modeling, particularly the performance evaluation. In addition, EPA did not develop a 2010 future year, so there would need to be an additional adjustment. Therefore, it is likely that the modeling would not be adequate for SIP purposes, such as designating counties as attainment versus unclassifiable.

### **TCEQ Ozonesonde Project Update– David Westenbarger (TCEQ)**

David presented an update on the TCEQ ozonesonde project. The project is being conducted by Gary Morris, Ph.D. (Valparaiso University), Barry Lefer, Ph.D. (University of Houston) and Robert Heinemann (Oklahoma State University) and David is the TCEQ technical liaison. For questions or more information contact David at [david.westenbarger@tceq.texas.gov](mailto:david.westenbarger@tceq.texas.gov).

As David reported, the TCEQ ozonesonde project has been on-going since its inception in 2004, focused primarily in the HGB area at the University of Houston campus. However, in 2010, the project was expanded to include a site near the Texas-Oklahoma-

Arkansas border (Idabel, OK), and this year, twelve ozonesonde launches are scheduled for the Eagle Mountain Lake (EMTL, CAMS 56) site in the DFW area. In addition to measuring the ozone concentration during the vertical ascent, wind speed and direction, air temperature, relative humidity, barometric pressure and GPS location are also measured, and the data are radioed back to a ground-based receiver. The data are available at <http://www.imaqs.uh.edu/ozone/ourdata.htm>.

During David's presentation, he was asked whether launches are made from multiple sites on the same day, in particular, if launches at Idabel are scheduled for the same days as the 12 launches from EMTL. David responded that on some of the days there will be launches at both sites. David was also asked about the averaging of the data by vertical layers and answered that the data is grouped into 500 meter bins (layers).

David showed a graphic of the vertical profile of mean ozone concentrations grouped by season and was asked why the vertical extent of the troposphere seemed to be higher during the summer (July, August and September). David responded that the expansion of the troposphere in the summer is probably due to the increase in air temperature.

David explained that the difference between the maximum ozone concentration measured in the free troposphere (FT) above the mixed layer (ML), and the maximum ozone concentration measured in the ML has been suggested as an indicator of the potential of transported ozone influencing the maximum daily ozone in an area, such as HGB or DFW. That is, if the difference is positive, there is the potential of the higher ozone in the FT mixing down into the ML, adding to the ozone generated locally. This difference was determined for each of the days ozonesondes were launched from the HGB site and the differences were separated into groups based on the magnitude of the ozone (greater than or less than 75 ppb) and relative humidity (less than 10% or greater than 40%) in the FT. Three groups of particular interest are: (1) maximum ozone less than 75 ppb and maximum relative humidity less than 10% in the FT, suggesting little likelihood of mixing down into the ML, (2) maximum ozone greater than 75 ppb and maximum relative humidity greater than 40% in the FT, suggesting elevated ozone from anthropogenic or biomass burning with a high likelihood of mixing down into the ML, and (3) maximum ozone greater than 75 ppb and maximum relative humidity less than 10% in the FT, suggesting stratospheric intrusion with a likelihood of mixing down into the ML. David showed a graphic and table depicting the frequency of occurrence of the number of days in each group by season, winter (JFM), spring (AMJ), summer (JAS) and fall (OND).

During this part of the presentation and discussion, David was asked whether the same analysis, i.e., grouping the days by FT ozone and relative humidity, could be done for the Idabel site. He responded that it could but currently there are not very many days. David was also asked whether the frequency distribution could be extrapolated to estimate the expected number of exceedance days per year with high ozone in the FT. David indicated, he thought it would probably require launching ozonesondes more often than currently scheduled, although, he thought the frequency analysis based on the current set of data is probably the minimum.

David was also asked about background ozone being natural or anthropogenic, and answered that the two groups with relative humidity less than 10% in the FT should reflect natural background ozone and the group with relative humidity greater than 40% in the FT most likely reflects a background composed of a notable amount of anthropogenic produced ozone, since the more humidity in an air mass the more likely it is that the air mass has incorporated air from the mixed layer in the lower troposphere.

David was also asked about the potential for stratospheric intrusion during the spring and fall, and responded that the group of days with high ozone and low relative humidity in the FT would include days with stratospheric intrusion and this group of days is not particularly overly represented in the spring and fall. It is not clear from the current data whether there is a higher potential for stratospheric intrusion in the spring and fall.

### **The Sulfur Dioxide (SO<sub>2</sub>) Special Inventory Request and Preliminary Modeling Plan – Ron Thomas (TCEQ)**

Ron presented a summary of the special SO<sub>2</sub> emissions request and the preliminary SO<sub>2</sub> SIP modeling plan. For questions or more information contact Ron at [ron.thomas@tceq.texas.gov](mailto:ron.thomas@tceq.texas.gov).

Ron reported that on June 2, 2011, the governor's office submitted the TCEQ's recommended SO<sub>2</sub> air quality designations based on the monitored 2009 design values. Only one county, Jefferson, was recommended to be designated nonattainment. The other nine counties (i.e., Dallas, Ellis, El Paso, Galveston, Gregg, Harris, Kaufman, McLennan, and Nueces) with requisite SO<sub>2</sub> monitoring data were recommended to be designated attainment, and all other counties were recommended to be designated unclassifiable. Ron also reported that EPA expects to make the final area designations by June 2012, which will be based on the monitored 2010 design values. Ron indicated that the 2010 design values do not suggest any other counties than Jefferson will be deemed nonattainment by EPA.

As Ron explained, in order to conduct the nonattainment and maintenance area SIP modeling, the TCEQ requested a special SO<sub>2</sub> emissions inventory for 2009 (mailed out June 15, 2011). During the discussion regarding the special SO<sub>2</sub> emissions inventory request, Ron was asked whether the request required permit allowable or potential to emit emissions. Ron responded that the request was for both actual and allowable emissions. Ron further explained that the actual emissions for 2009 are needed for model performance evaluation and allowable emissions are needed to demonstrate modeling attainment and maintenance.

Ron was also asked when areas would know if the modeling supported an attainment designation, and responded that the TCEQ needs to incorporate the new SO<sub>2</sub> emissions, so the earliest that modeling results will be available is likely March 2012. Ron responded further that the SIP submission dates are June 2013 for maintenance areas and February 2014 for nonattainment areas (i.e., Jefferson County) with attainment dates of 2017.

As Ron explained, the SIP modeling plan (i.e., protocol) is being developed in conjunction with the TCEQ Air Permits Division. Currently, the plan is to conduct state-wide coarse grid (e.g., 36 km) modeling with CAMx to identify (screen) areas with minimal projected design values (e.g., half the SO<sub>2</sub> NAAQS) to eliminate from further consideration. The next step would be to model the remaining areas (e.g., multiple counties) with CAMx at a higher grid resolution (e.g., 12 km) and/or with AERMOD to identify more localized areas for refined modeling with AERMOD.

During the discussion of the modeling plan, Ron was asked about draft guidance and the use of CAMx to screen out sources. Ron responded that other entities, in particular LADCO, are also planning to use CAMx, if only for developing background SO<sub>2</sub> concentrations. Erik Snyder also responded that EPA still needed to work out some of the modeling details, but he expects the modeling guidance to follow the template set forth in the guidance for using modeling to develop designations.

### **Final Cross-State Air Pollution Rule (formerly Transport Rule) Modeling – Jim Smith, Ph.D. (TCEQ)**

Jim presented a review of the Cross-State Air Pollution Rule (CSAPR) modeling. For questions or more information contact Jim at [jim.smith@tceq.texas.gov](mailto:jim.smith@tceq.texas.gov).

Jim reported on the CSAPR modeling, which used a 2005 base case year and future years of 2012 and 2014. Source apportionment, using APCA and PSAT, was used to link various monitors with modeled 2012 future concentrations greater than or equal to the pertinent NAAQS, with notably culpable upwind source regions (i.e., states) For the ozone modeling, Texas was linked to two monitors, one in Baton Rouge, LA, and another in Allegan County, MI. For the PM<sub>2.5</sub> (sulfate), Texas was linked to a monitor in Madison County, IL. As Jim pointed out, the 2012 CSAPR modeling did not include any of the emission reductions that have been implemented for CAIR.

During Jim's presentation, he was asked whether the contribution from Texas represents maximum conditions, and responded that this is likely since the days with the highest modeled concentrations are used in determining the relative response factor.

Jim was also asked whether the difference between the larger 2012 CSAPR modeled design values and the monitored 2010 design values could be attributed to CAIR reductions. Jim responded that it is unlikely the discrepancies could be explained by CAIR alone, but to be sure, 2012 modeling with CAIR reductions would need to be conducted by EPA.

Also during Jim's presentation, he and Erik Snyder (EPA) were asked about the changes to the modeling between the CSAPR rule proposal and the adoption. Erik responded that the most significant changes were to the meteorology pre-processing and revised emissions from the new IPM runs.

## **Next Meeting Schedule and Agenda Topics**

Dick suggested that the next meeting be during the second half of October, and he would work with Graciela to find a date when conference rooms are available. The EPA is scheduled to announce the revised ozone standard any day now, so a presentation concerning the standard could be scheduled. Also, there has been some interest in identifying exceptional events for the HGB monitored ozone, and presentations on this subject could also be scheduled for the August meeting. The meeting was adjourned.