

SOUTHEAST TEXAS PHOTOCHEMICAL MODELING TECHNICAL COMMITTEE

Meeting Summary

June 22, 2010

H-GAC Offices
3555 Timmons Avenue
Houston, Texas

Members and Guests Present:

Susan Moore, Dan Baker, Bruce Davis, Ken Gathright, Daniel Cohan, Wei Tang, Antara Digar, Fred Manhart, Ed Fiesinger, Graciela Lubertino, Brandon Greulich, Clint Harper, and Dick Karp, and Lola Brown, Angela Kissel, Jamie Zech, Jim Smith, Liz Hendler, and Michael Feldman, via telephone.

SIP Planning and Implementation Update – Lola Brown & Jamie Zech (TCEQ)

Lola reported on several items. (Note: Lola's presentation is available on the SETPMTC Web site, http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html and contains specific links to the various items.)

The letter requesting termination of the 185 fee program applicable to HGB was sent to EPA on May 20, 2010. Other than an acknowledgement of receipt, EPA has not responded to the request. Also, TCEQ will take comments on the potential ozone nonattainment area boundaries, pursuant to the 2010 new ozone NAAQS, until COB September 3, 2010. In addition, guidance and clarification documentation (Form ECT-6H) for HECT participants is now available on the TCEQ web site. Further, three stakeholder meetings (identical) concerning the VOC storage rule revision have been scheduled for Arlington, June 24, 2010, Austin, June 25, 2010, and Beaumont, June 28, 2010. Comments on the rule revision will be accepted until COB July 19, 2010.

Lola also indicated that interested parties could check the "What's New in TCEQ Rules" at: <http://www.tceq.state.tx.us/rules/whatsnew.html>. Participants commented that the TCEQ's "What's New in TCEQ Rules" web page provides an option to sign up for regular e-mail notification.

Jamie gave a verbal update regarding SIP planning and implementation issues for BPA. Jamie indicated that BPA is included as one of the areas in the Rider-8 program and as such, BPA is in the process of planning for the 2010 new ozone NAAQS and requisite SIP. Jamie also reported that on May 17, 2010, EPA proposed approval to redesignate BPA as attainment for the 1997 ozone NAAQS (Docket ID No. EPA-R06-OAR-2008-0932). The comment period for the proposed redesignation closed June 16, 2010, although EPA has not indicated when they would go final. Dick asked Mike Feldman (EPA/6) for a follow up.

For other questions or more information, please contact Lola at lbrown@tceq.state.tx.us or Jamie at jzech@tceq.state.tx.us.

H-GAC Air Quality Issues – 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 explained that a new conformity analysis is required since there has been an update to the 2035 Regional Transportation Plan (RTP). The new Transportation Improvement Plan (TIP) for 2011-2014 will be approved by the Transportation Planning Committee (TPC) on June 25, 2010. The new RTP, which has a reduced project list necessitated by the lowered projection of revenue from fuel taxes due to increasing fleet fuel efficiency, will be sent to the TPC for approval later this year. Graciela asked Mike Feldman (EPA/6) to check on what Motor Vehicle Emission Budget (MVEB) H-GAC should use for the new conformity determination.

Graciela also mentioned that at the June 25, 2010, TPC meeting, H-GAC would be getting approval for a one-year project working with TTI to develop a methodology to calculate Greenhouse Gas (GHG) emissions from mobile sources as well as quantifying emission reductions from mitigation measures.

Implication from the new NO₂ and SO₂ NAAQS – Erik Snyder (EPA)

Erik was unable to participate in the meeting. Therefore this topic will be rescheduled. Michael Feldman, a new EPA modeling staff member, participated by telephone.

Application of Satellite Observations to Ozone Attainment Planning in Texas – Daniel Cohan, Ph.D., Rice University

(Note: Dan's presentation is available on the SETPMTTC Web site, http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html.)

Dan reported that in collaboration with Arastoo Pour-Biazar at UAH, they have been awarded a two year ROSES grant from NASA. As Dan indicated the misplacement of clouds predicted by meteorological models (e.g., MM5, WRF) leads to incorrect attenuation of clear sky photolysis rates, in particular the photolysis rate for NO₂. The NO₂ photolysis rate influences the NO₂ concentrations, which in turn influences the ozone concentration and its sensitivity to NO_x concentrations, that is, whether ozone production is NO_x- or VOC-limited.

The approach of their project is to:

- use GOES satellite cloud data to improve photolysis rates,
- use OMI satellite NO₂ column data and other NO/NO₂ data to create a top-down NO_x emission estimates via inverse modeling, and
- use the CAMx-HDDM technique to assess how satellite-derived inputs influence ozone-precursor response in the recent Texas SIP modeling episodes.

Dan indicated they planned to apply this approach to TCEQ's August – September 2006 HGB and June 2006 DFW base case modeling.

During Dan's presentation of the technique for the NO_x inverse modeling, he was asked about the temporal resolution of the top-down NO_x emission estimates. Dan responded that generally the emission adjustments would be daily and would not distinguish between day and night or weekday versus weekend.

Dan requested that participants provide comments and feedback on his presentation. Dick mentioned that the TCEQ modeling uses the Plume-in-Grid (PiG) extensively for the larger point sources of NO_x emissions. They need to be mindful of this in the inverse modeling and application of CAMx-HDDM, since inverse modeling and HDDM are run without a PiG algorithm.

Summary of Current TCEQ Air Quality Projects - Dick Karp, TCEQ

Dick provided a summary of the air quality projects currently (fiscal year 2010) underway that have relevance to southeast Texas SIP modeling. (Note: Dick's presentation is available on the SETPMTTC Web site,

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

Dick explained that this item was on the agenda for the last meeting (April 7, 2010) but was rescheduled for this meeting to accommodate other presentations. In addition, Dick noted that there are changes to the previous presentation, since some projects have been rescheduled for FY2011.

Dick presented the projects in tabular form, grouped as to whether they involve monitoring, emissions or modeling activities. As Dick explained, the monitoring projects are expected to provide enhanced data for model performance evaluation, the emission projects are expected to provide improved updates to the modeling emissions and the modeling projects are expected to provide enhancements to CAMx.

Dick requested that participants consider which of these projects they would like to see presented at upcoming meetings. It was suggested and seemed agreeable that one project from each of the groups (monitoring, emissions and modeling) could be presented at each of the upcoming meetings. Dick indicated that would work and that Berry Lefer and Bernhardt Rappengluck indicated they could present results from the SHARP air quality monitoring study at the August 18, 2010, meeting. In addition, Environ has completed the alternative plume rise algorithm for CAMx and that could be presented at the next meeting. Regarding emission projects, participants noted interest in "Estimated Emissions from Barges while in Transit" (TCEQ-2010-16; ERG) and "Locate and Quantify HRVOC Emissions Loss from Pipelines" (TCEQ-2010-33; ERG).

Review of HRVOC Cost Analysis (Project 2009-52) and HRVOC Flare Emissions at Low Flow Conditions (Project 2009-53) - Brandon Greulich, TCEQ

Brandon's presentation provided a summary of two projects involving HRVOCs. (Note:

Brandon's presentation is available on the SETPMTTC Web site,

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

During Brandon's presentation he was asked about the calculation of the average annual cost effectiveness for HRVOC emission reductions, in particular why the typical BACT procedure was not used. Brandon responded that the information regarding costs and emission reductions was collected by ENVIRON via a fairly general survey of HECT facilities grouped into one of four industrial categories (Terminals, Refineries, Polymer and Chemical), and therefore, the cost

analysis was simplified. The ENVIRON study is available online at the following link, under Appendix B-4,

http://www.tceq.state.tx.us/assets/public/implementation/air/rules/Flare/AppendixB_FTF_Draft_Report.pdf.

Also during Brandon's presentation, participants commented that since most flares at HECT facilities (~82%) are used to handle both routine and emergency loading, they are generally going to be operating well below their design capacity, and even for routine flares the average loading is only about 10% of the flares design capacity. Brandon was also asked about the Flare Study and responded that he was not directly involved, but participants could contact Russ Nettles (512-239-1493) or Lindley Anderson (512-239-0003) for more details.

Satellite-Derived Land Cover for Air Quality Modeling – Clint Harper, TCEQ

Clint presented the status of a couple of projects that will update the land-use and land-cover (LU/LC) information used for air quality modeling, in particular the development of biogenic emissions. (Note: Clint's presentation is available on the SETPMTC Web site, http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html.)

As Clint indicated during his presentation, LU/LC data is used in the CAMx photochemical model (e.g., deposition), the WRF meteorological model (e.g., soil moisture), as well as GloBEIS, the biogenic emissions model. Since biogenic VOC emissions can often account for 50 percent of total VOC on high ozone days, these VOC emissions need to be estimated as accurately as possible.

During Clint's presentation, he was asked about the availability of ground-truthing for satellite imagery over Mexico and responded that that is an issue, but there are reasonable land cover surveys for the more vegetative northeast portion of Mexico that will be in the modeling domain.

Clint was also asked about projecting the change in LU/LC for future (e.g., attainment) years, and responded that it could be an important issue, especially for the urban forest. The discussion related to urban expansion resulting in the removal and/or replacement of trees for landscaping purposes and subsequent maturation of trees, which take place over time. However, the uncertainty in predicting the future change in LU/LC is too high to generate reliable estimates of future biogenic emissions. Thus, although there could be significant emission differences due to the change in LU/LC of the future urban and surrounding residential areas, currently the same hourly biogenic emissions used to model the base cases (e.g., 2006) are used to model the attainment year (e.g., 2018).

In addition, Clint was asked about LU/LC changes resulting from hurricanes and responded that it is also an important consideration. For example, the path of hurricane Rita (2005) went through the relatively heavily forested area in east Texas, and hurricane Ike (2007) may well have perturb Houston's urban forest, and areas of the Big Thicket.

Agenda Items for August 18, 2010 Meeting

Dick indicated that the next SETPMTC meeting is scheduled for August 18, 2010, and he will work with Graciela to get dates for October and December 2010 meetings.

There seemed to be general acceptance for scheduling a presentation from each of the three groups of projects (i.e., air quality monitoring, emissions and modeling) at each of the next meetings. The participants also indicated they would like an update on the Flare Study.

Tentatively, a presentation on the results of the air quality monitoring SHARP study and the alternative plume rise algorithm for the CAMx model were proposed for the next meeting. Also, participants suggested either a presentation on the barge in transit or HRVOC pipeline air quality emissions projects.