

SOUTHEAST TEXAS PHOTOCHEMICAL MODELING TECHNICAL COMMITTEE

*Houston-Galveston Area Council Offices
3555 Timmons Avenue
Houston, Texas*

February 27, 2014 10:00 a.m. – 3:30 p.m.

ATTENDEES

Rohit Sharma, Walt Crow, Brad Flowers, Jian Zhang, Dan Baker, Colin Moore, Marise Textor, Bernhard Rappenglueck, Dennis McNally, Judy Bigon, Graciela Lubertino, Jim Smith, Jonathan Steets, Kelly Covington, Francisca Padva, Yunsoo Choi, Liz Hendler, Jarrett Davis, Greg Stella, Erik Snyder, Lola Brown, Melanie Rousseau, Kristin Jacobsen, Doug Boyer

MINUTES

Doug Boyer with the Texas Commission on Environmental Quality (TCEQ) welcomed the group and started the meeting. All slide presentations are available on the SET PMTC Web site, http://www.tceq.state.tx.us/implementation/air/airmod/committee/pmtc_set.html.

SIP Planning and Implementation Update – Lola Brown (TCEQ)

Lola gave an update on the SIP and Rule actions that occurred since our last meeting. Lola also discussed upcoming TCEQ agendas that have SIP actions, including the proposal for the HGB Emission Inventory SIP from December 11, 2013.

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

Graciela provided an update of current H-GAC conformity planning, which was completed with MOBILE6.2. Future conformity work will need to be MOVES-based as it is the EPA-approved on-road mobile emission model.

Graciela also provided an overview of her Journal of Air & Waste Management Association published paper, “Radical precursors and related species from traffic as observed and modeled at an urban highway junction.”

2013 Ozone Season Review – Jonny Steets (TCEQ)

Jonny reviewed the 2013 ozone season and compared the design value to previous years and other areas within the State. The preliminary 2013 design value is 87 ppb, above the current 2008 eight-hour ozone standard and the previous 1997 eight-hour ozone standard. One participant appreciated the map exhibiting the change in 2012 to 2013 design values. Jonny noted that the HGB area is currently meeting the previous one-hour ozone standard.

Jonny also presented an evaluation of the meteorology from 2013. In Houston the temperatures were near normal through the summer though precipitation was below normal. Daytime wind speeds and directions were similar to previous years. Back trajectories from the current design value setting monitor, Manvel Croix, were shown for the days where eight-hour ozone concentrations were above the NAAQS. A question was asked about the start time of the 2-hr back trajectories. Jonny got back to the requestor after the meeting that they originated at the beginning hour of the peak eight-hour period.

EPA Update – Erik Snyder (EPA Region VI)

Erik gave a verbal update on relevant EPA actions. Erik noted that the SIP modeling guidance is being updated by EPA's Office of Air Quality Planning & Standards. A draft is expected to be shared with EPA's regional offices in the May/June timeframe. OAQPS does not intend for it to be shared with states and planning organizations for comment, which is unlike previous versions. Erik was asked what types of changes could be expected if EPA is not taking comment. He expects small changes such as how the relative response factor (RRF) is calculated.

Erik was asked when the next MOVES on-road emission factor model will be released but he did not know.

The next ozone standard should be final at the end of 2015, which is likely to include a secondary standard. The modeling guidance and implementation rule are expected to be updated to account for this standard.

Status Report on 8-hr Coalition Modeling – Dennis McNally (Alpine Geophysics)

Dennis provided an update on the 8-hr Coalition ensemble modeling. They added 2011 WRF/MM5 and GlobEIS/MEGAN runs to their 2008 – 2010 runs of the same nature. The 2011 modeling upgraded the base emission inventory from the 2008 NEI to the 2011 NEI. Error and bias statistics improved for the 2011 modeling, perhaps indicating the 2011 NEI has a better characterization of emissions in the HGB area.

Dennis also presented trends in fourth high eight-hour ozone concentrations from 2006 – 2013. The slope (rate of change) from the monitors ranged from -2.488 ppb/year to +0.095 ppb/year. It was noted that this slope would change based on the starting year. No geographic patterns were found in the rate of change in fourth highs.

2023 was modeled as a future year and the attainment test was applied from 2011 as the baseline year. The 2023 modeling did not account for the Tier 3 vehicle and fuel sulfur rules. The average relative response factor was 0.83 and all monitors were below 75 ppb in 2023. All but one monitor (Manvel Croix Park) was modeled below 70 ppb, but no monitor modeled below 60 ppb, the proposed range for the 2015 ozone standard. Dennis indicated that they intend to rework the 2010 modeling using the 2011 NEI.

TCEQ Modeling Update – Doug Boyer (TCEQ)

Doug updated the group on the TCEQ's current photochemical modeling by comparing to the previous HGB Attainment Demonstration (AD) SIP modeling. The current work is focused on the DFW AD SIP revision. While the modeling domains have grown to cover more area, the 2006 base year emissions haven't changed significantly despite being updated to the latest estimates. The largest change appears to come from updated oil and gas emission estimates. The TCEQ has changed to the latest version of the CAMx photochemical model, the MEGAN biogenic emission model, and the WRF meteorological model.

Preliminary 2018 future year modeling for the DFW area predicted a maximum future design value of 77 ppb. A sensitivity analysis of the impacts of 10 ppm sulfur gasoline indicates a maximum 0.80 ppb reduction at the Denton Airport South monitor in Denton county. EPA's own modeling predicted about a 1.0 ppb reduction in Denton county and ~0.5 ppb reduction in the HGB area from the sulfur content rules.

Future changes to the modeling platform may include updated Texas point sources based on the 2012 State of Texas Air Reporting System (STARS), oil and gas emission estimates from 2012

Railroad Commission of Texas production data, and other emissions from the next version of the 2011 NEI. The TCEQ may use updated WRF meteorology and chemical mechanism improvements.

Doug also showed a new interactive modeling results tool that exhibits the base case modeling results and surface measurements on a Google Map. The tool is available for everyone to use on the TCEQ's external website: <http://www.tceq.texas.gov/airquality/airmod/data/results>.

Automatic daily evaluation of air quality forecasting system at UH over the Southeast Texas (4km) and over the United States (12km) – Yunsoo Choi, Ph.D. (University of Houston)

Dr. Choi showed the attendees results from his group's air quality forecasting from the September 2013 DISCOVER-AQ study period. They model a 12km continental U.S. and 4km southeast Texas domain with a WRF-SMOKE-CMAQ model setup. On average their modeling showed good agreement with ozone and PM2.5 observations. During some periods, PM2.5 was over-predicted but the cause was unknown.

2013 and 2014 TCEQ Air Quality Division Research Projects – Doug Boyer and Jim Smith, Ph.D. (TCEQ)

Doug reviewed relevant 2013 TCEQ-funded research projects. Those projects evaluated satellite NO2 data for model adjustment/constraint, continued the operation of instrumentation at Moody Tower, implemented a CAMx-WRF forecast modeling system for Texas, improved the CAMx GREASD Plume-in-Grid module, and researched the foreign contribution to Texas ozone through boundary condition sensitivities.

Jim informed the group about relevant 2014 TCEQ-funded research projects that should be completed this fiscal year. They included the analysis of data to understand the contribution of Saharan dust to local PM2.5 observations, ambient and mobile monitoring in the Eagle Ford, flare optimization while limiting soot formation, improving our land cover characterization, improving our understanding of ozone deposition/destruction over the Gulf of Mexico, and improving stratosphere-to-troposphere exchange of ozone in CAMx.

Many of the final reports for TCEQ's research projects are posted online: <http://www.tceq.texas.gov/airquality/airmod/project>.

Next Meeting

The group suggested that future meetings occur quarterly as long as topics exist. Potential future topics include:

- Review of 2014 [NASA ACAST](#) Meetings
- [DISCOVER-AQ](#) study analyses
- 2013 [Texas Air Quality Research Project](#) (AQRP) results
- TCEQ future-year HGB modeling results
- Update on UH's real-time modeling platform
- 2013 NOx and VOC trends