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6.19.03 Conference call notes on SJC Photochemical Modeling

Jeremy Rishel, LANL
Charlene Anderson, Farmington, NM
Ralph Williams, Class One
Richard Grimes, APS
Brittany Benko, BP
Jeff Fredine, NM DOT
Dale Wirth, BLM
Andy Berger, NMED
Mary Uhl, NMED
George Sharpe, Farmington City Council
Quang Nguyen, EPA Region 6
Erik Snyder, EPA Region 6
Tom Tesche, Alpine Geophysics
Nate Herbst, SUIT
Myke Lane, WFS

Tom Tesche introduction: Grew up in Los Alamos, PhD from UC Davis, 30 years of experience in ozone modeling. Alpine has 6 offices around the country; all work is on modeling for regulatory studies. Ralph Morris of ENVIRON is co-principal investigator in this study. Tom and Ralph both worked for SAI in early 70s. Alpine and ENVIRON work together on many projects collaboratively. They are also working on the Denver EAC and several other EACs in Texas. Dennis McNally will be working with Tom on this also.

Tom went over the schedule for the study. The contracting process took a little longer than was anticipated, but Alpine/ENVIRON believes we are on schedule. The first 2 deliverables are on track. Both have been produced in short order. The first is episode selection/conceptual model document. There is also a modeling protocol that lays out the game plan for the whole study. The two reports are due to NMED June 30, 2003. The protocol should be available in a few days. While Alpine is being assertive in developing these documents, comments/feedback are invited.

Once we achieve closure on the protocol, we can start to do the technical work. One of the important steps is model evaluation (comparing model predictions to monitor observations). This will happen late in the fall. The evaluation will follow EPA guidelines. In December/January, work will be done to determine future year impacts. Entire project is scheduled to be completed spring '04. Fairly tight timetable given problem being addressed.

Emission inventory is essential ingredient in scheme. Air quality model requires this to determine impacts of ozone in every "gridbox" in the region. Emissions can come from local sources or from distant sources (LA, Phoenix, Houston). Proposing use of emissions inventory for 2002. Emissions model will take all of emissions estimates and

transform into emission rates for every gridbox for every hour for every source. Inventory is specific to each day being modeled, as many are temperature dependent. Hourly emissions data will be obtained from large power plants and possibly from large oil and gas sources. Mobile source emissions will be calculated based on average fleet characteristics of San Juan County, elevations and ambient temperatures.

Episode Selection: One of main considerations is to select episodes with high ozone levels (close to or above design value, 76 ppb in this case, average of the 4th highest 8-hour concentration over 3 years). Should be from 3 most recent years of data (2000-2002). Must consider pros and cons of episode.

Propose to cover almost 2 months of time, so we will evaluate “low-ozone” and high ozone days and be able to determine model performance.

Nate Herbst (SUIT) stated that all the proposed episodes are during the Missionary Ridge and Rodeo fires. During this time, PM-10 concentrations monitored by SUIT were up to six times higher than normal. Using data that occurred during the fire could be problematic. Tom responded that some days in summer '02 episode were likely influenced by fire. Could still investigate these days, just not put as much regulatory weight on these episodes. The fire emissions will be in the inventory. Hard to find a period where wildfire is not a concern. Nate suggested 2001 might be more appropriate. August 5-6, 2001 would be a good candidate episode. Alpine suggests the proposed period because it contains 4 embedded episodes covering a range of conditions to provide a more robust study. This is consistent with EPA guidance.

Year 2000 peaks are higher than design values, 2001 are lower than design values, and so these might create a bias in control strategy evaluation. If there are uncertainties stemming from fire emissions, some days may not be appropriate for control strategy development.

Episodes selected all seem to suggest transport, are there some episodes where there was stagnation? Plots were developed by Alpine that demonstrate the origin of air parcels at surface and upper levels of the atmosphere prior to elevated ozone episodes. August 11, 2001 episode shows a stagnation event where local emissions may cause more ozone formation. Alpine suggested some sensitivity tests and/or source apportionment capability of CAMx that will assist in determining the contribution of local sources.

Tom will send out the draft modeling protocol.

NEXT CALL: June 26, 2003 2:00 pm

NEXT meeting: July 16, 2003 3:00 –5:00 pm at the Farmington Civic Center