BART Modeling Technical Discussion
[Note: The Department did not record or transcribe the April 18, 2007 technical
teleconference. The following minutes are only a paraphrase of the actual discussion.]

Tom Turner
Alan Schuler
Rebecca Smith
Tim Allen, USFW
John Notar, USFW
Herman Wong, EPA (not able to attend)
Kristy McCullough, Agrium
Mark Garrison, Agrium
Don Caniparoli, CH2M Hill
Chris Drechsel, Tesoro
Ken Richmond, Tesoro Consultant
Yelena Saville, AML&P
Al Trbovich, Hoefler
Steve Barnard, Hoefler
Doug Murray, TRC Solutions
Jason Reed, TRC Solutions
Kip Knutson, with Tesoro

Introduction

   Tom —Primary purpose of this meeting is to deal with technical issues with
developing modeling protocols.
   Alan – Provided status report and summarized modeling issues:
   o Draft 7 of the WRAP summary report is up on the WRAP page; the only
     difference from Draft 6 is the inclusion of the NH_3 sensitivity analysis info.
   o There are 5 days of CALMET output data up on the DEC FTP site, so that people
     can download it. If you'll need it after today, let Alan know so he can reload it.
   o Some sources have found emission rate errors (e.g., Department switched NOx
     and PM emission rates). In these cases, sources only need to correct errors and
     highlight changes in their submittal (i.e., no need to revise protocol).
   o If sources want to change the switches/settings in the runs, they will need to
     propose the change and provide justification in a revised protocol. DEC will
     check the proposed changes with the FLMs and EPA and give feedback.
   o Some consultants have asked about changing the RMAX1 setting and the
     precipitation settings. These too should be discussed in a revised protocol. In
     regards to the RMAX1 setting, Tim Allen (FWS) stated the value must be at least
     two times larger than the MM5 grid. Therefore it has to be greater than 30 km
     since the MM5 grid size is 15 km. If sources want to use something other than
     WRAP's 50 km value, they'll need to include justification in their proposed
     protocols.

Doug—Wants to discuss the Maximum vs. 98% value. (Previously provided a plot of one set of results via e-mail. Felt the maximum value is an outlier.)

Alan— Referenced the discussion regarding this topic at the last workshop. Also pointed out that the plot represents only one source, one site, and one year of data, which is statistically insufficient to determine whether the maximum value is truly an outlier. If additional years of data were overlaid on this figure, then the maximum value may no longer appear to be an outlier. Further noted that the use of the maximum deciview value is identical to the approach used in EPA's Guideline on Air Quality Models where the high first-high is used as a surrogate for the high second-high concentration in situations were there is inadequate meteorological data (i.e., long-standing practice to use the maximum value when data is in question).

Chris—Wanted to get feedback from DEC and FLMs as to whether the variations they are considering are potentially viable or completely unacceptable.

Alan—The FLMs are on the line and are knowledgeable about the modeling issues so should be able to help.

Tom—Wants everyone to remember that the DEC process has to satisfy the FLMs.

Agenda Overview—

Overview of CALMET, etc methods
> Ken—No questions

CALPUFF Version
> Someone—Question about the recommended/approved version of CALPUFF. The Guideline version is 5.711a -- WRAP used version 6.112.

Alan—EPA Region 10 approved V6 for WRAP to use for the BART modeling. OAQPS says that source specific modeling should use the guideline version, but EPA Region 10 has said that the guideline version or V6.0 as approved for WRAP's work is okay. Recommends that sources stick to the WRAP protocol as much as possible.

Tim—If sources want to deviate from the guideline version or the version used by WRAP, they will need to provide reasons and justification in the proposed protocols they submit.

98th Percentile with Additional Met Years?
> Chris—Will using 98% with only 2002 met data be unacceptable to DEC and the FLMs?

Tim—That is correct. If there is more data available that can make the data set more robust, they (FLMs) would consider allowing the 98%. However, it would need to be a very solid increase in data.

Chris—The sources have been looking into the possibility of getting 2 more years of met data and have a sense that it wouldn't take as long as DEC and FLMs think to compile it. If they had 2 more years of data, would it be acceptable to use the 98% value?

Tim— That would be going in the right direction. They would need to have 3 full years of MM5 data plus observations into it. No-obs MM5 data is not acceptable. Also, even with 3 years of MM5 data, other RPOs were required to use the Max value (Mid-West, others?). In addition, the PacNW states used the 20% worst days.

Alan—Concerned with time. It took WRAP 4 months of run time to develop 1 year of AK MM5 data, which did not include the set up time.

Tim—Also would need to address performance methods. For example, WRAP's AK MM5 data was poorer than that for the contiguous states. Would need to conduct the same quality check that WRAP did to evaluate the new MM5 data.

Ken—They have benchmarked the MM5 run. They think they could develop 3 years of MM5 data in about 10 days and have the grid set at 5 km. They have 128 nodes available for processing. They think they could fully develop the MM5 data in 2-3 months, including set up time. The data would be fully nudged.

Doug—TRC thinks they could develop the data in about the same timeframe and could have it done before the regs were finalized.

Tim—FLMs would still want to look at the proposed protocols.

Ken—They would use the same approach to develop the MM5 data as used by WRAP.

Tom—If the work to develop 3 years of MM5 data can be done within the regulations publication and finalization timeframe, that's acceptable.

Alan—If they can develop a 5 km MM5 run, that would be great (i.e., DEC would love to have a copy when it's complete).

Discrepancies
Tim— As previously noted, sources may request to use different CALPUFF version. However, they will need to obtain a letter from EPA saying that the request is acceptable. Have the letter refer to the revision/version number. "Home-grown" revisions would be more problematic than already discovered and corrected errors.

Someone—Asked if EPA had approved the CALPUFF version that PacNW used?

Tim—Yes, but OAQPS is lenient in letting Regions use non-guidance CALPUFF versions for BART purposes only. Will need to have Region 10 approvals for anything else in writing.

Over-water Bug

Ken – Problem with WRAP's overwater planetary boundary layer (PBL) characterizations. Always stable in over water locations. This is incorrect meteorology. TRC has released a corrected algorithm in latest version of CALPUFF 6. Not on TRC's web-site yet.

Tim – This would present a problem if its not publicly available yet.

Precipitation Problem

Ken—problems with hourly precipitation estimates, as there are spikes every 24 hours. May be reporting cumulative daily precip. Should have been fixed, as it's a problem that's been known about for the past 5 years. MM5 and CALMM5 need to be rerun.

CALPUFF Options

Ken or Doug—In the WRAP CALPUFF protocol and runs, some of the defaults were not selected but WRAP provided no explanation as to why. Can they use:

CDIV default — using or not using default can result in a difference of a factor of 2

MNITRATE = 1— [Sidebar comment from Tim: WRAP apparently had problems making this work]

PUFF splitting?

Tim and John--All of these changes are fine with them. Need to note them in protocol. Tim does not recommend the ALM method from the VISTA work.

Don—Based on the problems pointed out above, will the Department be asking WRAP to rerun the analysis.

DEC staff—No, as we're out of $ and time, and any further modeling effort needs to be the sources' responsibility.

Doug—Comment on RMAX1 needing to be greater that the MM5 grid?

Tim—Modeling should pick values that match the MM5 grid to be valid. Don't make R1 = 1, R2 = 1, RMAX1 = 1, etc. Need to have the observations blended into the MM5 data; don't make the values so small that the effects of observations get obliterated.

Someone—What about using "barriers" in CALMET to represent the channeling in Cook Inlet?

Tim — Haven't seen that approach used in other BART assessments. Not comfortable with that approach.

Chris—If they propose changes to their protocols, have 3 years of MM5 data, and propose to use 98% value, could they get approval of the protocols upfront or would they need to provide data runs before changes could be approved?

Tim—Once DEC and the Feds have signed off on a protocol, sources can go with them. Approving the process – not the results. The results will be what they are.

Wrap-up

Tom—Any additional questions?

None

Chris—the BART7 project management schedule is on its way; should have by end of week.