

Suggestions to Guide the Modeling Forum's Development of a Work Plan

We believe that the development of an RTC is an important long-term goal of the WRAP states. However, we believe, in the short term, several tools (starting with the simplest) should be developed in overlapping phases. These tools can be viewed as nested screening. The concept of using screening models is a familiar one in air quality planning. For example, the SCREEN model is generally used much more often than more sophisticated models like ISC and CALPUFF to scope out the impacts of point sources. Similarly EKMA, a simple trajectory box model, is often used to evaluate alternate control strategies and policies before UAM-V is applied. In plume blight visibility modeling VISCREEN is used before PLUVUE is invoked.

We envision three phases of haze modeling, from screens to detailed scientific analysis. The Phase 1 model is to provide results in minutes to hours; the Phase 2 model in days to weeks; the Phase 3 model in months.

- Phase 1: Develop a Simple Planning/Design/Scoping Model (“the 80-mpg \$1500 motor scooter”). A model is required that can evaluate individual source-receptor relationships. We envision that a tool similar to what EPA’s Office of Air Quality Planning and Standards (OAQPS) is using routinely would benefit the WRAP states. Such a tool could be developed for a PC with a user-friendly interface. The model would include emissions at the county level, a source-receptor (S-R) matrix from which incremental impacts can be calculated extremely efficiently, and control cost data. The existing S-R matrix should be supplemented with one based on the CALPUFF model. The tool, including a CD-ROM and a user’s guide, would be provided to each of the States, Tribes, and other stakeholders that would want it. Possible contractors: Pechan & Associates and ENVIRON (both have been involved in developing similar tools). Estimated cost: <\$200K. Timeframe: < 8 months.
- Phase 2: Develop a More Sophisticated Screening Model (“the 40-mpg \$10,000 Ford Focus”). The Phase 2 model would be developed based on the REMSAD model currently being used extensively at OAQPS. Work is currently underway at OAQPS to develop a “light” version of REMSAD, called REMSAD-ST (ST stands for “Screening Tool.”) and its emissions preprocessor. The design objective is to be able to do a yearlong simulation within 2 days. This phase would transfer this technology to the States and Tribes. The model would be evaluated by comparing calculations with measurements. A user’s manual would be developed. A CD-ROM with code and input databases would be delivered. One or more training seminars would be provided. Presumably the contractor would be asked to make some runs, and further runs would be the responsibility of the States and Tribes. Possible contractors: ENVIRON and SAI. Estimated cost: <\$150K. Timeframe: <12 months.
- Phase 3: Transfer and Apply the Most Sophisticated Model (“the 10-mpg \$45,000 Cadillac SUV”). Models-3 (or CMAQ, its core) will be transferred for use in the cumulative impact analyses required by the RHR. The existing “Proof of Concept (PoC)” CMAQ application at OAQPS will be studied, transferred, and applied. In the PoC work OAQPS is running CMAQ for the entire country (Lower 48) for an entire year (1996) at 36-km grid spacing. This could be WRAP’s base case. OAQPS is evaluating the CMAQ calculations with IMPROVE measurements. It is not clear if other PM-2.5 data will be available. The consultant will obtain copies of CMAQ and all input and output files used in the PoC, install them on a computer, demonstrate that the results are identical to OAQPS,’ and deliver this capability (with training) to the States and Tribes. Additional runs might be requested as part of this task. Possible contractors: AER, ENVIRON, RWDI, MCNC, Alpine Geophysics, RAND, ENVAIR, CSU, CU, UC Riverside. Estimated cost: <\$250K. Timeframe: 9-12 months

- Phase 4: Technology Transfer¹ and RTC Design. The RTC would be developed primarily by the States, Tribes, and Federal agencies but with input from consultant(s). Contractor cost: <\$75K. Timeframe: After all of first three phases of work is completed. So, this work would start in roughly the June 2001 timeframe. Contractor support would drop off to zero in about 6 to 9 months.
- Phase 5: Program Integration, Model Intercomparison, and Refinement. Once all of the above phases have been implemented, it will be necessary to continue the improvement, evaluation, and integration of the three types of visibility modeling. Cost, scope, timeframe are to be determined.

The combined cost of Phases 1-3 is less than \$600,000. Assuming the MF budget is \$1.3 million, this leaves \$700,000 to purchase computers, software, etc. and to hire full- or part-time personnel for the RTC and management. It seems to us that this will provide redundant and reliable products (the endpoints) needed to develop Section 309 SIPs by the June 2002 deadline. It will provide a diverse range of capability to the States and Tribes as well as the RTC, while leaving significant funding for the RTC and for the States and Tribes to run two levels of haze screening models and Models-3. It keeps intact the basic thrust of the MF's planning in our Phases 3 and 4.

¹ A colleague has suggested that all of the Regional Planning Organizations (RPOs) throughout the country lobby to have EPA do all of the Models-3 runs required for regional perspective analysis. This would provide great economies and efficiencies. The states could build on the national Models-3 runs for more detailed analysis with finer grid spacing for subregional or intrastate analysis.