



CALPUFF Status and Update

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CALPUFF Modeling System

- June 2007 update to Regulatory Approved Version
 - CALPUFF version 5.8, level 070623
 - CALMET version 5.8, level 070623
 - CALPOST version 5.6394, level 070622
- Issued May 2009 Model Clearinghouse memo to Region 8 on CALPUFF modeling protocol for BART along with Draft Reassessment of IWAQM Phase 2 recommendations
 - CALPUFF modeling system continued to evolve so IWAQM guidance no longer reflected current state of world
 - Followed by Aug 2009 Clarification memo on EPA-FLM recommended settings for CALMET to “freeze” model control options for most regulatory applications.



CALPUFF v6.4

- API contracted with AER to update CALPUFF chemistry
 - Karamchandani et al. (2008), presented at 9th Modeling Conference
- TRC updates CALPUFF v6.0 with the API sponsored updates resulting in v6.4
 - Gas-phase chemistry corrections and new PM and aqueous-phase chemistry modules
- WEST Associates/API meeting with EPA OAQPS and FLMS on February 15, 2011.



Regulatory Status of CALPUFF

- April 15, 2003 promulgation for NAAQS and PSD increment
 - Distances from 50-km to 200-km, 300-km maximum (40 CFR 51, Appendix W, Section 6.2.3)
 - Complex Wind situation (40 CFR 51, Appendix W, Section 7.2.8, requires justification under Appendix W, Section 3.2.2(e) – alternative models)
- NOT approved for chemistry
 - 40 CFR Part 51 Appendix W does not identify a “preferred model” for use in attainment demonstrations of the NAAQS for ozone or PM_{2.5} or uniform rate of progress assessments for regional haze. Models used for these purposes should meet requirements for “alternative models” as defined under Section 3.2.
 - May be used for reasonable attribution of visibility impairment (RAVI) (Appendix W, Section 6.2.1(e))
- Regulatory Status Under 40 CFR 51.308 (e)
 - Appendix Y (“BART Guidelines”) states “you may use CALPUFF or other appropriate model to predict the visibility impacts from a single source at a Class I area.”
 - Appendix Y does not confer status as EPA ‘preferred model’ for either secondary particulate matter or visibility



Regulatory Status of CALPUFF

- Regulatory status for Air Quality Related Values (AQRV's)
 - Guidance pertaining to application of any model for purposes of AQRV's is under jurisdiction of FLM's
 - Modeling techniques and guidance for other regulatory requirements and their implementation is under the jurisdiction of the issuing agency the manual or directive (Appendix W, Section 6.1 (b))
 - The FLM has an affirmative responsibility to protect AQRVs that may be affected, and to provide the appropriate procedures and analysis techniques (Appendix W, Section 6.2.3 (a)).



Status of CALPUFF v6.4

- EPA and FLMs have some technical issues and concerns about adequacy of evaluation
- Regardless, V6.4 updates specific to chemistry do not allow the Agency to go through previous CALPUFF update process because it is outside of “approved regulatory use”.
- EPA informed model developer of that fact in Feb 2011 and that Interagency Workgroup on Air Quality Modeling (IWAQM) will be forum and process to inform that rulemaking process



Status of CALPUFF v6.4 – cont'd

- Necessitates a regulatory update to Appendix W through notice and comment rulemaking that includes required public review and comment.
- USEPA reaffirmed its decision regarding use of v6.4 in response to comments on NM Regional Haze FIP.
 - Lack of adequacy of evaluation methods employed for full chemistry models (Appendix W, Section 3.2.2(e)(iv))
 - No formal scientific peer review (Appendix W, Section 3.2.2(e)(i))
 - No protocol or other forms of modeling inputs were provided to reviewing authority (Appendix W, Section 3.2.2(e)(v))
 - No review of model code changes per update process



Need for Agency to Address Chemistry under Appendix W

- Sierra Club filed a lawsuit against EPA on August 31, 2011 alleging that EPA is unreasonably delayed in :
 - responding to an administrative petition for rulemaking to identify air quality models for ozone and PM_{2.5} to use in evaluating applications for PSD permits under the Clean Air Act, and
 - taking action required under the Clean Air Act § 165(e)(3)(D) to designate such models through rulemaking.
- Gina McCarthy letter on January 4, 2012¹ granting Sierra Club petition . . .
 - to engage in rule making to evaluate updates to Appendix W and, as appropriate, incorporate new analytical techniques or models for ozone and secondary PM_{2.5}.
 - use the existing process and procedures under Section 320 of the Clean Air Act (CAA) to complete the appropriate rulemaking process to update Appendix W.



Interagency Workgroup on Air Quality Modeling (IWAQM) Phase III Effort

- IWAQM was originally formed in 1991 to provide a focus for development of technically sound regional air quality models for regulatory assessments of pollutant source impacts on Federal Class I areas.
 - Phase 1 consisted of reviewing EPA guidance and recommending an interim modeling approach to meet the immediate need for a LRT model for ongoing permitting activity
 - Phase 2 report provided a series of recommendations concerning the application of the CALPUFF model for use in long range transport (LRT) modeling that informed EPA's promulgation in 2003 of CALPUFF.
- Phase 3 focus on next generation model to meet Federal program needs such as
 - Single source ozone and secondary PM_{2.5}
 - AQRVs (visibility and deposition)
- Latest efforts by EPA and FLMs to be reported on during session on "Emerging Models and Techniques"



CALPUFF Latest

- Recall that in April 2006 Earthtech sold CALPUFF rights to TRC
- EPA has been working with TRC since that time on regulatory updates to CALPUFF modeling system
- In Spring 2011, Joe Scire and ASG staff left TRC for Exponent Inc.
- TRC retains CALPUFF rights and will continue working with EPA to serve regulatory needs



CALPUFF Update

- EPA recognizes the need to update the current regulatory version of CALPUFF Modeling System to address known bugs.
- EPA will meet with FLMs by end of month to take account of all known bugs.
- Based on that information, EPA will make formal request of TRC to provide an updated 5.8 version of CALPUFF modeling system with bug fixes, results of the CALPUFF update tool, and post updated CALPOST to address new IMPROVE equation (as previously requested in Fall 2011).