Fed/State Technical Work Collaboration Group Conference Call Notes

June 29, 2020

Attendees:

EPA: Norm Possiel, Chet Wayland, Alison Eyth, Steve Fine, Ben Murphy, Rich

WESTAR: Mary Uhl, Tom Moore, Farren Herren-Thorpe

CENSARA: Michael Vince, Tom Richardson

LADCO: Zac Adelman

SESARM: John Hornback, Jim Boylan

MARAMA: Marc Cone, Susan McCusker

How can EPA share datasets with MJOs and states? OAQPS asked ORD to join the conversation today about cloud-based modeling opportunities.

Steve Fine (ORD) explained the concept of cloud-computing, which uses computers and storage at multiple sites around the world. Resources are fluidly assigned to various tasks agnostically (as available). The benefits of cloud-computing are that it is highly scalable, flexible, reduces infrastructure costs and there is secure back-up/disaster recovery. EPA uses MSOffice in the cloud.

Norm Possiel noted the challenges with the current environment for MJOs: there is capacity to run CMAQ and WRF, but idle times may be a concern and simulations are complex. The goals for EPA are to facilitate computing in the cloud for states and MJOs; however, states and MJOs would need to retain in-house staff expertise to run the models. The time is right for this change because providing states and MJOs with resources will eliminate idle-time issues and help improve communications. An example annual cost for cloud-computing a CMAQ run with source-apportionment would be $15,000. Zac Adelman asked if runs could be performed on-demand, but that is not known at this time. He asked if the costs are just cpu costs or if the costs also include data storage. EPA said the costs are just cpu. Zac noted that costs will likely be double the estimated costs because online storage is necessary.

Norm Possiel noted the 5 steps necessary to proceed:

1. Requirements analysis to determine need;
2. Details of sharing;
3. Addressing security issues;
4. Migration of data; and
5. Expanding capability of analysis tools.

Norm asked if EPA should work through the MJOs to communicate with states on this initiative.

* SESARM responded that costs are difficult to determine and they need to see more data on costs. John Hornback said that he is convinced that we’ll need to do this in the future. He said some states don’t have in-house expertise for photochemical grid modeling and that SESARM doesn’t have in-house modeling expertise.
* LADCO responded that states need capacity to do modeling where they have in-house expertise. The question would be how to pay for cloud-computing. Zac would like to be involved in further discussion. EMF would be a nice addition.
* WESTAR responded that only a handful of states in the west have capability to conduct photochemical grid modeling. WESTAR’s contractors use cloud-computing. Tom Moore noted that we need to separate the goal of enhancing state modeling efforts from the goal of getting more states to do photochemical grid modeling. John Hornback added that additional capacity at a reasonable cost may offer states options to begin modeling.

Chet Wayland asked if those on the call thought cloud-computing could help grow modeling capacity at states.

* LADCO responded that contractor computing costs have been discounted in the past because of the ability to reuse runs. Would there be more costs passed along in the future?
* WESTAR (Tom Moore) noted that the west already has invested in the Intermountain West Data Warehouse for storage, so additional storage would be duplicative for the west.
* MARAMA has had EMF on the cloud for a couple of years; they are happy to share experiences.

Norm Possiel summarized the next step as identifying discussion participants. A first step might be to improve MJO capacity then expand to states and locals.

Tom Moore liked the idea of completing a requirements analysis to share with states. WESTAR is happy to participate in this effort.

Zac Adelman will engage LADCO states to collect information from states. MARAMA, CENSARA and SESARM will do the same. All agreed to a 30-day turnaround for response. Additional thoughts should be sent to Norm Possiel by Monday, July 6.

Tom Moore asked that we develop a requirements specific document for MJOs to share with states. Norm said that EPA will put the requirements into an “easier-to-share” document.

Zac Adelman asked to what extent EPA should include a cost-estimator for users so that costs don’t spin out of control. John Hornback reinforced that state agencies will want to know costs ahead of time.

Tom Moore noted that if EMF were available and any states could access it through cloud-computing, this would increase state participation and reduce individual state workload.

Jim Boylan asked about cloud-compatibility; the state of Georgia has state cloud service through Azure, and it would be important to know if EPA is considering a compatible service to Azure.