Preliminary Comments from Mr. George A. Allen on

EPA's Integrated Science Assessment for Ozone and Related Photochemical Oxidants

(Second External Review Draft – September 2011)

General comments:

The inclusion of the integrated summary (Section 2) is very useful; it makes the bigger picture much more accessible. These comments focus on Chapter 3. Overall this chapter is substantially improved over the March 2011 first draft.

More discussion of the western oil/gas field winter ozone scenario may be helpful in two ways. We now have 2 known areas with high winter ozone: the WY Green River Basin as noted, and the Uinta Valley (including Ouray) in UT (little to nothing is in the literature yet for this location). Understanding the relatively few and easily characterized precursor sources may add to our knowledge of many aspects of ozone formation, especially the roles of temperature and moisture. These locations may be studies of opportunity. Similar areas likely exist that do not currently have any monitoring. This may be worth noting in section 3.5, monitoring networks. Another area of new concern is the massive increase in fracking activities in many parts of the country; fugitive emissions and emissions from on and off-road HDD engines are a potentially new and large source of ozone precursors.

My previous comments referenced the 2011 Canadian Smog Science Assessment report from Environment Canada and Health Canada, an externally peer reviewed but not journal published document. It was scheduled to be released Dec. 2011. To the extent that Chapters 3 and 7 may be relevant to chapter 3 of the ISA, it would be worth a review.

Pg 3-1 line 15. Typo; reference here to Section 3.1 should be 3.5 .

Pg 3-5 lines 29-30, and elsewhere re: on-road NOx emissions. With rapid changes to HDD NOx controls coming into effect, the inventories may lag or become more rapidly outdated. To the extent that this may be relevant to this discussion, it could be noted. It is an on-road analog to the NOx SIP call in 2003.

Pg 3-10 line 10. CNG vehicles can be a large source of formaldehyde; if this fleet continues to expand in urban areas without proper emission controls, it may become a larger factor in urban inventories.

Pg 3-14 lines 21-27. Long et al. (J. Air & Waste Manage. Assoc. 50:1236-1250) may be another source for quantitative understanding of SOA generation from ozone and pinenes.

Pg 3-16 lines 23-35. See general comments above regarding high winter ozone in rural industrial valleys.

Pg 3-18 lines 6-22. Good quality routine (non-research) NOz measurements are scarce. EPA's intent to develop a NOy reference method for possible future NOx-SOx NAAQS may also benefit the understanding of the relationship between NOz and ozone.

Pg 3-20 and elsewhere re: NOx emission trends in the eastern US. Similar to expected decreases in on-road NOx (Pg 3-5 above), stationary source NOx emissions may be further reduced by the "transport" rules (CAIR, CSAPR, etc.). Together these control programs may reduce NOx emissions relatively rapidly and thus potentially change the landscape of high and low NOx regimes.

Pg 3-28 lines 29-35, extending the CMAQ domain in the northern hemisphere.

Pg 3-29 lines 5-11. Sentence structure problem.

Pg 3-31 lines 26-32 and elsewhere. From a NAAQS perspective, the examples of remote NA background O3 may be more useful if expressed in the current NAAQS form (98^{th} %tile, 3-year mean).

Pg 3-34 lines 28-37. There will be much more coming out of the long Mt. Washington NH summit high elevation data record, but perhaps not in time for inclusion in this round of the NAAQS review. The year-round ozone measurements started by UNH/AIRMAP have been taken over by the NH Dept. of Conservation air monitoring program; those data are in AQS, and a year of collocated data were collected during the transition. This extends the data (starting in 2001) from the end of AIRMAP monitoring in spring 2010 (not in AQS) through the present and presumably the foreseeable future. These data are helpful in characterizing stratospheric intrusion as well as long term trends in long-range transport in the northeast US. Yaping Xiao (UNH/AER) has work in progress on this analysis.

Pg 3-46 to 3-49, section 5.3.1 (monitoring methods). There has been much discussion over the last decade of interference issues from FEM UV monitors. This section summarizes the work well. Taken as a whole, concerns about positive interferences in the UV monitoring method do not seem to be relevant in the context of compliance monitoring. The cases of meaningful interferences are limited and unlikely to have a meaningful impact on ozone design values. Overall, the quality of contemporary ozone data are very good relative to data quality for other NAAQS pollutants 3.5.2 through 3.5.4).

Pg 3-55, section 3.5.5.2. NO-based chemiluminescence ozone monitors appear to be a robust measurement technique and are now commercially available. The TAPI instrument is a good candidate for a revised ozone FRM in this round of the review.

Pg 3-70-71 and elsewhere. The number of year-round ozone site has increased substantially since 2009, with the 2011 implementation of NCore monitoring and other initiatives. It may be worth noting for reference the number of ozone monitors reporting for the winter of 2011-2012.

Pg 3-95 lines 10-17. I strongly agree with the caution about approximating community-scale exposures from the relatively sparse (relative to expected spatial variability) urban monitoring network.

Pg 3-103-105, multi-year trends. These trends are very important in assessing progress in ozone control programs. Pg 304 line 13-14 notes that Cleveland is among the cities with the largest reductions in ozone from 2001 to 2008. However a 20-year (1990-2007) ozone trend from a Cleveland monitoring site (39-035-0034) shows no meaningful change (source: EPA trends report).

Pg 3-112, section 3.7. This Chapter Summary section is very useful in pulling together the information presented in the previous 111 pages. It complements the integrated summary (Chapter 2) nicely.

Sections 3-8 to 3-10 (supplementary material). Moving this material to this section substantially improves the readability of section 3 while keeping the details behind the other sections readily available.