Question 13: Please comment on the draft Mercury Risk TSD's discussion of analytical results for each component of the analysis. For each of the components below, please comment on the extent to which EPA's observations are supported by the analytical results presented and whether there is a sufficient characterization of uncertainty, variability, and data limitations, taking into account the models and data used.
§ *Mercury deposition from U.S. EGUs*

Overall Comment:

EPA's observations are generally supported by the data presented in the assessment report. The SAB recommends that the spatial patterns of simulated deposition shown in Figure 2-1 to 2-4 be better explained, and that additional references be reviewed for the discussion of model uncertainty and data limitations.

Specific Comments:

EPA's observations about Hg deposition shown in TSD Figures 2-1 to 2-4 are supported by analytical results. However the 12-km deposition maps are very different than previously produced maps on the 36-km scale (for example in Texas and Nevada). The SAB recommends that additional effort be exerted to explain these difference and that EPA should consider including separate maps of wet and dry deposition and/or aggregating the results into an approximately 36 km grid scale for comparison to earlier maps and to data plots, such as national deposition maps from the Mercury Deposition Network.

In general, the uncertainties associated with these results are not well-characterized nor adequately quantified. For example, there have been several intercomparison studies among numerical models for long-range transport of Hg and studies on model uncertainty evaluation that are not discussed or referenced. A summary of these would be a useful addition to help frame the overall uncertainty of the deposition estimates.

Bullock, O. R., Jr., et al. (2009), An analysis of simulated wet deposition of mercury from the North American Mercury Model Intercomparison Study, *J. Geophys. Res., 114*, D08301, doi:10.1029/2008JD011224

Bullock, O. R., Jr., et al. (2009), An analysis of simulated wet deposition of mercury from the North American Mercury Model Intercomparison Study, *J. Geophys. Res., 114*, D08301, doi:10.1029/2008JD011224.

Pongprueksa P., Lin C.-J., Lindberg S.E., Jang C., Braverman T., Bullock O.R., Ho T.C., Chu H., "Scientific Uncertainties in Atmospheric Mercury Models III: Boundary and Initial Conditions, Model Grid Resolution, and Hg(II) Reduction Mechanism," *Atmospheric Environment 42*, 1828-18451, 2008.

Lin C.-J., Pongprueksa P., Bullock O.R., Lindberg S.E., Pehkonen S.O., Jang C., Braverman T., Ho T.C., "Scientific Uncertainties in Atmospheric Mercury Models II: Sensitivity Tests over the Continental United States," *Atmospheric Environment 41*, 6544-6560, 2007.

Intercomparison study of atmospheric mercury models: 1. Comparison of models with short-term measurements Alexey Ryaboshapko, O. Russell Bullock Jr., Jesper Christensen, Mark Cohen, Ashu Dastoor, Ilia Ilyin, Gerhard Petersen, Dimiter Syrakov, Richard S. Artz, Didier Davignon, Roland R. Draxler, John Munthe *Science of the Total Environment 376* (2007) 228–240.

Intercomparison study of atmospheric mercury models: 2. Modelling results vs. long-term observations and comparison of country deposition budgets Alexey Ryaboshapko, O. Russell Bullock Jr., Jesper Christensen, Mark Cohen, Ashu Dastoor, Ilia Ilyin, Gerhard Petersen, Dimiter Syrakov, Oleg Travnikov,Richard S. Artz, Didier Davignon, Roland R. Draxler, John Munthe, Jozef Pacyna.

In addition, for the 2016 scenario a more complete discussion is needed about what inputs were kept constant and what inputs were varied (and by how much), although this may better be placed earlier in the report. In addition the CMAQ results are very dependent on global boundary conditions which are supplied by the GEOS-Chem model. Uncertainty in those inputs will be carried through to the results. This should be noted.