

EXECUTIVE SUMMARY

These comments are based on the draft Technical Support Document for Endangerment Analysis for Greenhouse Gas Emissions under the Clean Air Act (hereafter draft TSD) issued by the Climate Change Division of the Office of Atmospheric Programs on March 9, 2009. Unfortunately, because we were only given a few days to review this lengthy document these comments are of necessity much less comprehensive and polished than they would have been if more time had been allowed. We are prepared, however, to provide added information, more detailed comments on specific points raised, and any assistance in making changes if requested by OAR.

The principal comments are as follows:

1. The current Draft TSD is based largely on the IPCC AR4 report, which is at best three years out of date in a rapidly changing field. There have been important developments in areas that deserve careful attention in this draft. The list includes the following five:

- Global temperatures have declined—extending the current downtrend to 11 years with a particularly rapid decline in 1907-8; in addition, the PDO went negative in September, 2007 and the AMO in January, 2009, respectively. At the same time atmospheric CO₂ levels have continued to increase and CO₂ emissions have accelerated.
- The consensus on past, present and future Atlantic hurricane behavior has changed. Initially, it tilted towards the idea that anthropogenic global warming is leading to (and will lead to) to more frequent and intense storms. Now the consensus is much more neutral, arguing that future Atlantic tropical cyclones will be little different than those of the past.
- The idea that warming temperatures will cause Greenland to rapidly shed its ice has been greatly diminished by new results indicating little evidence for the operation of such processes.
- One of the worst economic recessions since World War II has greatly decreased GHG emissions compared to the assumptions made by the IPCC. To the extent that ambient GHG levels are relevant for future global temperatures, these emissions reductions should greatly influence the adverse effects of these emissions on public health and welfare. The current draft TSD does not reflect the changes that have already occurred nor those that are likely to occur in the future as a result of the recession. In fact, the topic is not even discussed to our knowledge.

- A new 2009 paper finds that the crucial assumption in the GCM models used by the IPCC concerning strongly positive feedback from water vapor is not supported by empirical evidence and that the feedback is actually negative.
- A new 2009 paper by Scafetta and West suggests that the IPCC used faulty solar data in dismissing the direct effect of solar variability on global temperatures. Their research suggests that solar variability could account for up to 68% of the increase in Earth's global temperatures.

These six developments alone should greatly influence any assessment of "vulnerability, risk, and impacts" of climate change within the U.S. But these are just a few of the new developments since 2006. Therefore, the extensive portions of the EPA's Endangerment TSD which are based upon the old science are no longer appropriate and need to be revised before a new TSD is issued for comments.

Not only is the science of the TSD out-of-date but there are a number of other disturbing inconsistencies between the temperature and other scientific data and the GHG/CO₂ hypothesis that need to be carefully explored and explained if the draft TSD is to be credible. Despite the complexity of the climate system the following conclusions appear to be well supported by the available data (see Section 2 below):

- A. By far the best single explanation for global temperature fluctuations is variations in the PDO/ENSO. ENSO appears to operate in a 3-5 year cycle. PDO/AMO appear to operate in about a 60-year cycle. This is not really explained in the draft TSD but needs to be, or, at the very least, there needs to be an explanation as to why OAR believes that these evident cycles do not exist or why they are much more unimportant than we believe them to be.
- B. There appears to be a strong association between solar sunspots/irradiance and global temperature fluctuations. It is unclear exactly how this operates, but it may be through indirect solar variability on cloud formation. This topic is not really explored in the Draft TSD but needs to be since otherwise the effects of solar variations may be misattributed to the effects of changes in GHG levels.
- C. Changes in GHG concentrations appear to have so little effect that it is difficult to find any effect in the satellite temperature record, which started in 1978.

- D. The surface measurements (HADCRUT) are more ambiguous than the satellite measurements in that the increasing temperatures shown since the mid-1970s could either be due to the rapid growth of urbanization and the heat island effect or by the increase in GHG levels. However, since no such increase is shown in the satellite record it appears more likely that urbanization and the UHI effect are the most likely cause. If so, the increases may have little to do with GHGs and everything to do with the rapid urbanization during the period. Given the discrepancy between surface temperature records in the 1940-75 and 1998-2008 and the increases in GHG levels during these periods it appears even more unlikely that GHGs have much effect on measured surface temperatures either. These points need to be very carefully and fully discussed in the draft TSD if it is to be scientifically credible.
- E. Hence it is not reasonable to conclude that there is any endangerment from changes in GHG levels based on the satellite record, since almost all the fluctuations appear to be due to natural causes and not human-caused pollution as defined by the Clean Air Act. The surface record is more equivocal but needs to be carefully discussed, which would require substantial revision of the Draft TSD.
- F. There is a strong possibility that there are some other natural causes of global temperature fluctuations that we do not yet fully understand and which may account for the 1998 temperature peak which appears on both the satellite and surface temperature records. This possibility needs to be fully explained and discussed in the Draft TSD. Until and unless these and many other inconsistencies referenced in these comments are adequately explained it would appear premature to attribute all or even any of what warming has occurred to changes in GHG/CO₂ atmospheric levels.

These inconsistencies are so important and sufficiently abstruse that in our view EPA needs to make an independent analysis of the science of global warming rather than adopting the conclusions of the IPCC and CCSP without much more careful and independent EPA staff review than is evidenced by the Draft TSP. Adopting the scientific conclusions of an outside group such as the IPCC or CCSP without thorough review by EPA is not in the EPA tradition anyway, and there seems to be little reason to change the tradition in this case. If their conclusions should be incorrect and EPA acts on them, it is EPA that will be blamed for

inadequate research and understanding and reaching a possibly inaccurate determination of endangerment. Given the downward trend in temperatures since 1998 (which some think will continue until at least 2030) there is no particular reason to rush into decisions based on a scientific hypothesis that does not appear to explain most of the available data.

Finally, there is an obvious logical problem posed by steadily increasing US health and welfare measures and the alleged endangerment of health and welfare discussed in this draft TSD during a period of rapid rise in at least CO₂ ambient levels. This discontinuity either needs to be carefully explained in the draft TSD or the conclusions changed.