

**Comments from the Northeast States for Coordinated Air Use Management
Presented by Paul J. Miller, Deputy Director & Chief Scientist
Before the House Subcommittee on Environment,
House Committee on Science, Space and Technology on
Impact of EPA's Proposed Ozone Standards on Rural America
April 29, 2015**

Good afternoon. My name is Paul Miller, and I am Deputy Director and Chief Scientist with the Northeast States for Coordinated Air Use Management (NESCAUM). I thank Mr. Chairman, Ms. Ranking Member, and all the members of the Subcommittee for providing NESCAUM with the opportunity today to offer the following comments on the U.S. Environmental Protection Agency's (EPA's) proposed ozone standards and potential impacts on rural America.

NESCAUM is a regional association of state air pollution control agencies representing Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. NESCAUM provides policy and technical support to our state member agencies in furtherance of their air quality and climate programs. Our member state agencies have the primary responsibility for developing strategies that will attain and maintain current and potentially revised ozone standards in their own states and in downwind out-of-state areas.

My testimony today reflects the majority views of NESCAUM as a state membership organization. Individual NESCAUM member states may hold separate views regarding issues specific to that state's circumstances, which may differ from the NESCAUM states' majority consensus.

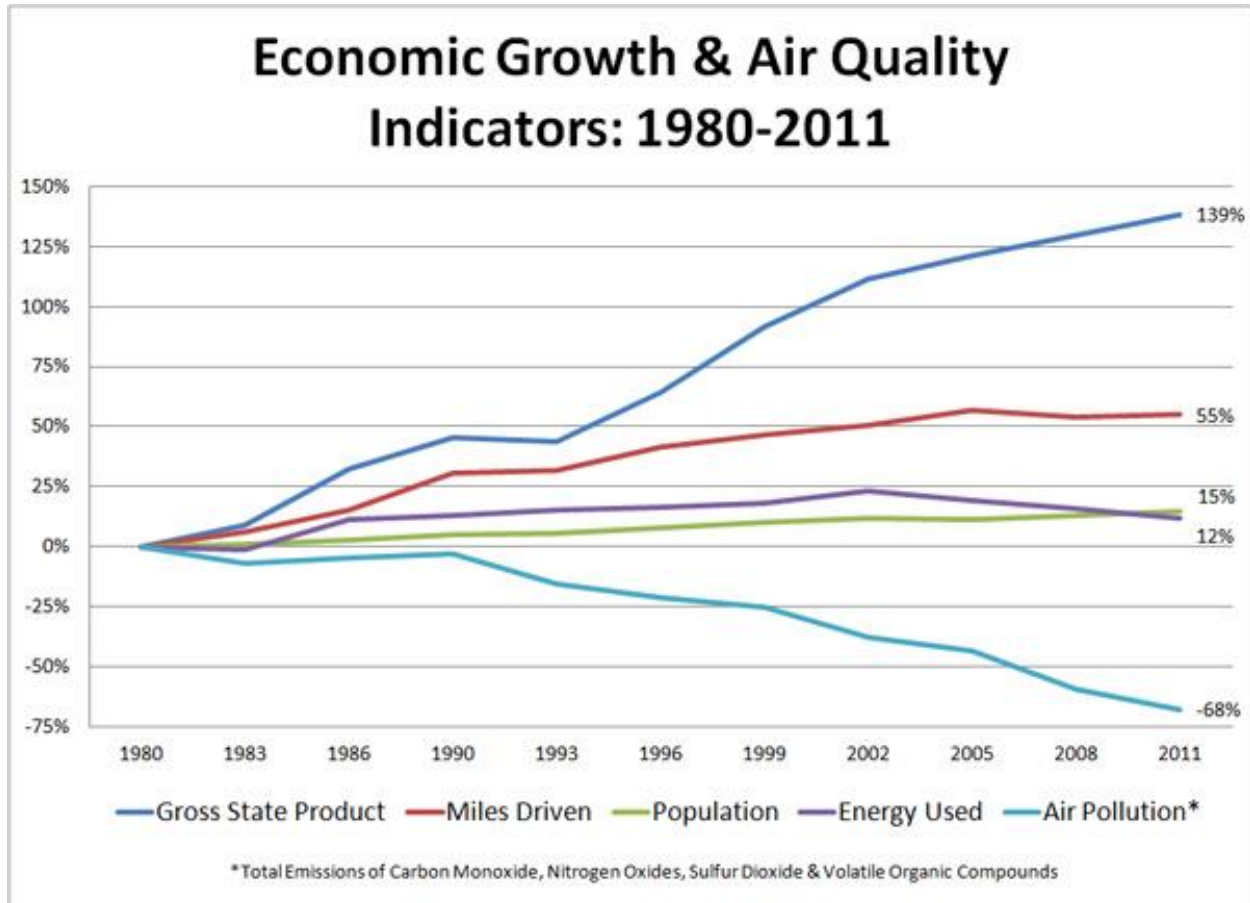
Over its 45 year history, the Clean Air Act has saved hundreds of thousands of lives and generated trillions of dollars in health and welfare benefits to our nation.¹ Compliance with national ambient air quality standards have consistently proven less costly and more beneficial than either its critics or supporters predicted.²

Within the NESCAUM region, states have successfully met the challenge of reducing air pollution over the years while their economies, populations, and energy use have grown (see example of Massachusetts in Figure 1 below).

¹ U.S. EPA, *The Benefits and Costs of the Clean Air Act: 1970 to 1990*, EPA Report to Congress, EPA-410-R-97-002 (1997); U.S. EPA, *The Benefits and Costs of the Clean Air Act from 1990 to 2020*, Summary Report, U.S. EPA Office of Air and Radiation (March 2011).

² See, e.g., NESCAUM, *Environmental Regulation and Technology Innovation: Controlling Mercury Emissions from Coal-Fired Boilers*, NESCAUM Report (Boston, MA), 2000. Available at http://www.nescaum.org/documents/rpt000906mercury_innovative-technology.pdf.

Figure 1. Trends in Massachusetts Economic Growth and Air Quality Indicators: 1980-2011



Source: Massachusetts Executive Office of Energy and Environmental Affairs, "Cleaner Air and Economic Growth," <http://www.mass.gov/eea/agencies/massdep/air/reports/cleaner-air-and-economic-growth.html> (accessed April 24, 2015).

While air quality has improved markedly under the existing framework of the Clean Air Act, the science clearly demonstrates that adverse impacts continue to occur at current ozone levels, and more protective ozone standards are needed.

- 1. NESCAUM supports a primary ozone health standard consistent with the science, consistent with the requirements of the Clean Air Act, and consistent with the Clean Air Scientific Advisory Committee's (CASAC's) recommendations.**

NESCAUM supports a health-based ozone standard within the CASAC-recommended range of 0.060 – 0.070 ppm, 8-hour average, that would ensure an adequate margin of safety as directed by the Clean Air Act.

Ground-level ozone is a respiratory irritant that adversely affects both people with respiratory disease and healthy children and adults. It can cause premature death. The science was sufficiently strong in 2007 to justify a more protective ozone health standard, but the standard set by EPA at that time fell short of what was needed. The science remained sufficiently strong in 2010 when EPA tried to reconsider its earlier revision, but ultimately could not do so. It is now 2015, and the science has only become stronger.

Lung function changes in healthy adults have been demonstrated to occur in controlled chamber studies at ozone levels of 0.070 ppm for up to 6.6 hours, the upper bound of EPA's proposed range.³ These data do not account for increased sensitivities due to age or pre-existing respiratory conditions such as asthma. They also do not account for exposures that can occur for longer than 6.6 hours. Ozone exposure at 0.070 ppm has also been linked to cardiovascular effects.⁴ These factors militate against the 0.070 ppm level being protective with an adequate margin of safety.

By extension, the current ozone NAAQS of 0.075 ppm remains inadequate. Retaining this as a standard should not be an option.

We recognize that Executive Order # 12866 requires EPA to conduct a regulatory impact analysis (RIA) for the proposed ozone NAAQS revisions. Such an analysis may include information about costs under various NAAQS scenarios, but must not come into play in EPA's decision on setting the level of the NAAQS. Only after the level of the NAAQS has been established should EPA consider issues on how to implement the standard efficiently in order to achieve health benefits as expeditiously as practicable. Implementation issues must not be considered in setting the level of the NAAQS.

2. NESCAUM supports a cumulative, seasonal standard in the form referred to as W126 for the secondary ozone standard to better protect agriculture and forests.

Ozone is the most important air pollutant affecting economically valuable agricultural crops and other vegetation in North America and elsewhere.^{5,6} Long-term exposure to ground-level ozone above natural background concentrations results in diminished crop yields^{7,8} and decreased forest

³ Clean Air Scientific Advisory Committee. CASAC Review of the EPA's Second Draft Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards. Letter to EPA dated June 26, 2014. See: [http://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/\\$File/EPA-CASAC-14-004+unsigned.pdf](http://yosemite.epa.gov/sab/sabproduct.nsf/5EFA320CCAD326E885257D030071531C/$File/EPA-CASAC-14-004+unsigned.pdf).

⁴ Ibid.

⁵ Mauzerall, D.L.; Wang, X. Protecting Agricultural Crops from the Effects of Tropospheric Ozone Exposure: Reconciling Science and Standard Setting in the United States, Europe, and Asia; *Annu. Rev. Energy Environ.* **2001**, *26*, 237-268.

⁶ Ashmore, M.R.; Marshall, F.M. Ozone Impacts on Agriculture: An Issue of Global Concern; *Adv. Botanical Res.* **1998**, *29*, 31-52.

⁷ Chameides, W.L.; Kasibhatla, P.S.; Yienger, J.; Levy, H. The Growth of Continental-Scale Metro-Agroplexes, Regional Ozone Pollution, and World Food Production; *Science* **1994**, *264*, 74-77.

productivity.^{9,10,11} In the United States, studies have estimated crop losses due to ozone damage in the billions of dollars annually.^{12,13,14}

In light of the existing science, NESCAUM supports a secondary ozone standard of the “W126 index” form. If the standard is based on a 3-year averaging period, then the level of the secondary standard should be set so that it does not exceed CASAC’s recommended range of 7-15 ppm-hrs in an individual year.

EPA is proposing to revise the secondary ozone NAAQS to a level within a range of 13-17 ppm-hrs averaged over three years, but setting the standard in the 8-hour form within the 0.065-0.070 ppm range, which it asserts would provide equivalent protection.

The W126 basis of EPA’s proposed secondary NAAQS is at and above the CASAC-recommended range. As a result, EPA’s proposed level is not entirely consistent with the existing science and CASAC’s recommended range.

As far back as 2001, ozone monitoring has indicated that much of the NESCAUM region may already be below 15 ppm-hours.¹⁵ Documented forest damage, however, still occurs at these levels. Trained observers in the national Forest Health Monitoring program routinely observed foliar ozone damage symptoms in sensitive tree species in sections of the NESCAUM region and elsewhere in the eastern U.S. at levels comparable to or below 15 ppm-hrs.¹⁶ This indicates that a secondary ozone standard of the W126 form towards the lower end of the CASAC-recommended range would provide better protection against current adverse impacts on forests in the NESCAUM region.

3. EPA and the states need to address interstate transport of ozone pollution and its precursors in a timely manner.

⁸ Fiscus, E.L.; Booker, F.L.; Burkey, K.O. Crop responses to ozone: uptake, modes of action, carbon assimilation and partitioning; *Plant, Cell, and Env.* **2005**, *28*, 997-1011.

⁹ Broadmeadow, M. Ozone and Forest Trees; *New Phytologist* **1998**, *139*, 123-125.

¹⁰ Chappelka, A.H.; Samuelson, L. Ambient Ozone Effects on Forest Trees of the Eastern United States: A Review; *New Phytologist* **1998**, *139*, 91-108.

¹¹ Karnosky, D.F.; Skelly, J.M.; Percy, K.E.; Chappelka, A.H. Perspectives Regarding 50 Years of Research on Effects of Tropospheric Ozone Air Pollution on U.S. Forests; *Envtl. Poll.* **2007**, *147*, 489-506.

¹² Adams, R.M.; Crocker, T.D. The Agricultural Economics of Environmental Change: Some Lessons from Air Pollution; *J. Envntl. Mgmt.* **1989**, *28*, 295-307.

¹³ Murphy, J.J.; Delucchi, M.A.; McCubbin, D.R.; Kim, H.J. The Cost of Crop Damage Caused by Ozone Air Pollution from Motor Vehicles; *J. Envntl. Mgmt.* **1999**, *55*, 273-289.

¹⁴ Avnery, S.; Mauzerall, D.L.; Liu, J.; Horowitz, L.W. Global crop yield reductions due to surface ozone exposure: 1. Year 2000 crop production losses and economic damage; *Atmos. Envnt.* **2011**, *45*, 2284-2296.

¹⁵ EPA OAQPS Staff Paper, “Review of the National Ambient Air Quality Standards for Ozone: Policy Assessment of Scientific and Technical Information,” EPA-452/R-07-003, January 2007 (Figure 7-6, p. 7-28).

¹⁶ Smith G, Coulston J, Jepsen J, Prichard T. A national ozone biomonitoring program: Results from field surveys of ozone sensitive plants in northeastern forests (1994–2000), *Environ. Monit. Assess.* **2003**, *87*(3), 271–291.

NESCAUM states are subject to significant ozone contributions from pollution sources in upwind states, in addition to pollution emitted within the NESCAUM region. Interstate transport must be addressed in order for states to meet more protective ozone standards.

4. EPA should consider ozone's contribution to climate change and methane's influence on ozone concentrations.

We note that ozone is a recognized contributor to atmospheric warming, and its global background levels have been rising due to increased anthropogenic precursor emissions. Addressing short-lived greenhouse gases (GHGs) helps mitigate near term climate change as ongoing deliberative processes proceed to address the longer-lived GHGs like carbon dioxide.

As an added co-benefit, an ozone standard that addresses its impact on climate change (as well as air quality) would include methane reduction strategies. Methane is a GHG in its own right, but is not typically considered in current ozone attainment strategies due to its relatively low chemical reactivity in the context of shorter term episodic peak ozone levels (e.g., 8-hour averages). In the global background context, however, methane can have a significant influence on ozone levels.¹⁷ In our 2010 comments on the reconsideration of the 2007 ozone standards, NESCAUM provided a preliminary modeling assessment of methane's influence on broad regional ozone concentrations in the eastern United States. Our modeling indicated that elevated methane concentrations above pre-industrial levels are contributing to increased long-term ozone in our region.¹⁸ This suggests that a methane reduction strategy will have "triple" benefits by reducing ozone as a GHG, reducing ozone as a criteria air pollutant, and reducing methane both as a GHG and ozone precursor.

5. EPA should be forward-looking in addressing mobile sources.

In achieving more protective ozone standards, mobile sources remain an important emissions sector. EPA needs to be forward-looking in addressing these as the full benefits of their emissions reductions take time to be realized due to fleet turnover rates and other factors. Strategies to reduce ozone forming nitrogen oxides (NO_x) from mobile sources, such as lower emission standards for heavy-duty on-road diesel vehicles, updated federal aftermarket catalytic converter policies, diesel inspection and maintenance programs, and idling reduction measures are opportunities for lowering ozone pollution going forward.

6. Summary

In sum, NESCAUM firmly believes that science must drive the ozone standards. We have remained consistent with the levels and forms that we have supported in previous EPA ozone

¹⁷ Fiore AM, Jacob DJ, Field BD, Streets DG, Fernandes SD, Jang C. Linking ozone pollution and climate change: The case for controlling methane. *Geophys. Res. Lett.* **2002**, 29,1919, doi: 10.1029/2002GL015601.

¹⁸ Northeast States for Coordinated Air Use Management. *Comments to EPA on Proposed NAAQS for Ozone*. March 2010. http://www.nescaum.org/documents/nesc_o3_naaqs_reconsid_comments_20100322-final-all.pdf.

reviews dating back to 2007.¹⁹ EPA's most recent proposal generally better aligns with the long-standing science, but may not adequately reflect levels needed to protect farms and forests.

I thank you for your attention, and I am happy to answer any questions you may have.

¹⁹ See: 1) Northeast States for Coordinated Air Use Management. *Comments to EPA on Proposed NAAQS for Ozone*, October 2007, http://www.nescaum.org/documents/nesc_o3_naaqs_comments-final-20071004.pdf; 2) Northeast States for Coordinated Air Use Management. *Comments to EPA on Proposed NAAQS for Ozone*. March 2010, http://www.nescaum.org/documents/nesc_o3_naaqs_reconsid_comments_20100322-final-all.pdf. For additional comments and oral testimony from NESCAUM on the NAAQS for ozone, see: <http://www.nescaum.org/topics/ozone>.