American Forest & Paper Association

AMERICAN WOOD COUNCIL

March 17, 2015

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mailcode 68221T
Attention Docket ID No. EPA–HQ–OAR–2008-0699
1200 Pennsylvania Avenue, NW.
Washington, DC 20460

Re: Comments on Proposed National Ambient Air Quality Standards for Ozone, Docket ID No. EPA-HQ-OAR-2008–0699

Dear Sir or Madam:

We are writing to offer the comments of the American Forest & Paper Association (AF&PA) and American Wood Council (AWC) on EPA's proposal to revise the primary National Ambient Air Quality Standards (NAAQS) for ozone, as published on December 17, 2014, 79 Fed. Reg. 75233 (the "proposed ozone NAAQS").

AF&PA serves to advance a sustainable U.S. pulp, paper, packaging, and wood products manufacturing industry through fact-based public policy and marketplace advocacy. AF&PA member companies make products essential for everyday life from renewable and recyclable resources and are committed to continuous improvement through the industry's sustainability initiative - *Better Practices, Better Planet 2020*. The forest products industry accounts for nearly 4 percent of the total U.S. manufacturing GDP, manufactures approximately $210 billion in products annually, and employs nearly 900,000 men and women. The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 47 states.

AF&PA's sustainability initiative - *Better Practices, Better Planet 2020* - is the latest example of our members' proactive commitment to the long-term success of our industry, our communities and our environment. We have long been responsible stewards of our planet's resources. Our member companies have collectively made significant progress in each of the following goals, which comprise one of the most extensive quantifiable sets of sustainability goals for a U.S. manufacturing industry: increasing paper recovery for recycling; improving energy efficiency; reducing greenhouse gas emissions; promoting sustainable forestry practices; improving workplace safety; and reducing water use.

AWC is the voice of North American wood products manufacturing, representing over 75 percent of an industry that provides approximately 400,000 men and women

with family-wage jobs. AWC members make products that are essential to everyday life from a renewable resource that absorbs and sequesters carbon. Staff experts develop state-of-the-art engineering data, technology, and standards for wood products to assure their safe and efficient design, as well as provide information on wood design, green building, and environmental regulations. AWC also advocates for balanced government policies that affect wood products.

AF&PA's and AWC's members operate facilities whose emissions are subject to regulation under the Clean Air Act ("CAA"); in fact, CAA compliance often represents a significant portion of operating costs at those facilities. In addition, AF&PA and AWC members' facilities use large amounts of purchased electricity (although they also generate much of their own electricity), and so their costs are indirectly affected by CAA regulations that impose costs on electric power companies. And since transportation costs for raw materials like wood chips and chemicals and delivery costs for products like paper and wood products are a significant portion of AF&PA and AWC's members' raw material costs and of the final cost to purchasers of their products, CAA regulations that increase transportation costs or interfere with highway construction can have an important impact on AF&PA and AWC members as well.

I. Overview

AF&PA and AWC support clean air and realistic, science-based air quality standards. However, the health effect evidence for ozone has not changed significantly since EPA tightened the ozone NAAQS in 2008, so a further change is not justified. EPA continues to rely on a limited subset of studies that reinforce their conclusions while ignoring or giving little weight to peer-reviewed scientific studies that support a position that current standards are adequately protective. . Specifically, there is a lack of definitive evidence linking low levels of ozone exposure – those below the current standard - to adverse health impacts. The evidence on which the proposal relies today is no stronger than it was the last time the standard was reviewed in 2008.[1] Furthermore, the new conclusions are not consistent with the majority of the science on the subject.[1,2] EPA's analyses show that few (if any) people would be adversely affected by ozone at the current standard.[3]

[1] Gradient (Cambridge, MA) "Long-Term Ozone Exposure and Mortality." Report to Utility Air Regulatory Group. (April 2013); Gradient (Cambridge, MA) "Short-term Ozone Exposure and Mortality." Report to American Forest and Paper Association (December 20, 2013); Gradient (Cambridge, MA) "Long-Term Ozone Exposure and Respiratory Morbidity." Report to American Forest and Paper Association (December 20, 2013).
[2] Honeycutt, Dr. Michael, "Will EPA's Proposed New Ozone Standards Provide Measurable Health Benefits?", National Outlook, Texas Commission on Environmental Quality (TCEQ) PD-020/14/07 (October 2014)
[3] US EPA. August 2014. "Health Risk and Exposure Assessment for Ozone (Final Report)." EPA-452/R-14-004a-e.

Second, a more stringent NAAQS is not needed to push further improvements in ozone levels. Ambient ozone concentrations in the United States already have dropped substantially over the past 40 years, while the population and economy have grown. Ambient ozone will continue to decrease, as a result of the continued implementation of the 1997 ozone NAAQS, implementation of the 2008 ozone NAAQS (which has barely begun), and numerous other regulatory programs already in place or in progress, such as Boiler Maximum Achievable Control Technology (MACT). Nitrogen oxide (NOx) and volatile organic compound (VOC) emissions from pulp, paper and wood product mills continue to decline. In fact, NOx emissions are down by over 25% from 2000 to 2012 at pulp and paper mills.

Third, states should proceed with implementing the 2008 ozone standard first before the ozone NAAQS is tightened again. Resources should be directed to designating areas as non-attainment with the 2008 standard and identifying necessary controls of mobile and stationary sources through State Implementation Plans (SIPs). With the March 6, 2015 publication of the Implementation Rule for the 2008 ozone NAAQS, states now have the guidance they need to develop SIPs. States, EPA and regulated entities should focus on those designation and implementation efforts.

Fourth, the proposal fails to take into account the impact of background concentrations of ozone on the attainability of the standard, which is required under the Clean Air Act. U.S. ozone levels are increasingly attributable to natural sources and pollution from other countries which must be considered when setting the ozone limits. Some ozone is generated naturally from plants, fires, and migration from the stratosphere to the troposphere. The proportion of ozone coming from other countries as far away as China is steadily increasing and becoming part of the "background." In some places, background concentrations (ozone that originates from natural sources or transported international emissions) contribute to over 80% of total ozone.[4] Even the Clean Air Science Advisotry Committee noted the lack of clarity regarding how ozone standards are impacted by background concentrations.[5]

Fifth, EPA has not reliably predicted how many areas of the country would be determined to be in nonattainment with the proposed ozone NAAQS by 2018 when designations are due and therefore what economic burden adopting the proposed standard would impose on the nation. Projections of non-attainment areas by EPA in 2025 are very optimistic (for example, taking credit for the proposed Clean Power Plan/section 111(d) standards for utilities even though they are likely to change at promulgation and are legally vulnerable) and irrelevant to the states' tasks of

[4] US EPA. August 2014. "Policy Assessment for the Review of the Ozone National Ambient Air Quality Standards." EPA-452/R-14-006

developing SIPs in the next couple of years. In addition, EPA does not know how the standard could ever be attained in many areas, such as California, using known emission controls, and thus the economic impacts EPA does predict are hopeful projections rather than reliable estimates. Even with these optimistic projections , the projected costs would make the proposed ozone NAAQS one of the most expensive regulations in Clean Air Act history.

Sixth, depending on the standard chosen and the implementation policies that are selected, the forest products industry could see costs as high as $3 billion under a tighter ozone NAAQS. A lower NAAQS will result in many more nonattainment areas putting at least five times more mills in or near these "no growth" zones. Mills seeking air quality permits to construct new projects at existing plants will be forced to consider pollution controls and find emissions offsets that may be technically infeasible or cost-prohibitive. Thus, investments that could create new jobs or maintain competitiveness are likely to be eliminated or scaled back by the tougher, proposed NAAQS.

Simply put, EPA has not yet assembled the information necessary to conclude that the proposed ozone NAAQS is required in order to protect human health or that the margin of safety EPA has applied is appropriate. EPA should evaluate the results from implementation of the existing 2008 NAAQS and other regulations before revising the ozone NAAQS yet again.

II. Revision of the Primary NAAQS Is Not Warranted

A. Background

Under CAA section 109(b)(1), EPA is to set primary National Ambient Air Quality Standards (NAAQS) at a level "requisite to protect the public health" with "an adequate margin of safety." Courts have held this to mean that the primary NAAQS must be sufficient to protect public health but not more stringent than necessary to protect public health. See *Whitman v. Am. Trucking Ass'ns*, 531 U.S. 457, 473 (2001). In other NAAQS rulemakings, EPA has indicated that it is appropriate to weigh a number of different considerations in deciding what level of a pollutant is "requisite" to protect public health and what constitutes an "adequate" margin of safety. These factors include, for example, the strength of the scientific evidence being considered, the severity of the health effects attributed to a particular concentration, the kind and degree of uncertainties involved, and the size and nature of the sensitive populations at risk.

EPA is proposing to reduce the primary ozone NAAQS based primarily on clinical studies showing respiratory effects at 0.060 to 0.080 ppm, and epidemiology studies suggesting that there may be effects of exposure to ozone concentrations below 0.075 ppm. The clinical studies, however, did not demonstrate a clear adverse health effect from exposure to ozone concentrations below 0.075 ppm, even in the extreme conditions of the clinical tests. Rather, they showed diminished lung function, according to some measures, in some individuals. The significance of those effects is unclear, however. Such uncertain observations are not a suitable basis on which to justify a conclusion that EPA needs to revise the current ozone NAAQS in order to provide adequate protection of public health, especially when viewed in the context of the achievability and societal costs of lowering the primary standard.

Also, in considering studies that subjected individuals to prolonged exposure to ozone, i.e., six-plus hours of exposure that in many cases included intermittent exercise, EPA needs to weigh the results against the probability of that kind of exposure in the real world. In other words, EPA needs to consider that it is unlikely that sensitive individuals will be exerting themselves for a prolonged period at a time and location where maximum ozone concentrations occur.

The epidemiological studies EPA suggests justify reducing the primary ozone NAAQS necessarily are a very imprecise way of assessing the level of ozone requisite for the protection of public health. It is very difficult, and in many cases impossible, to separate the observed effects of ozone and effects caused by other pollutants (or by a combination of ozone and other pollutants). Certainly the epidemiological studies EPA references as supporting a revised primary ozone NAAQS do not constitute the kind of clear evidence that would be needed to justify changing the judgments reflected in the 2008 rulemaking. If EPA wants to use empirical observations for large groups to reevaluate the appropriate level for the primary NAAQS, AF&PA and AWC suggest that a much better approach would be for EPA to study the effect that ongoing and future reductions in ambient ozone levels, as well as ambient levels of other pollutants, resulting from current NAAQS and from various other major air regulations that are coming into effect, will have on respiratory health.

B. Review of Controlled Exposure Studies

The proposal concluded that two new controlled exposure studies, by Kim *et al*. (2011) and Schelegle *et al*. (2009), support lowering the ozone standard. Kim *et al*. (2011) observed statistically significant lung function decrements and airway inflammation at 0.06 ppm. However, the mean decrements they reported across the

study population were so small (1.71% and 1.19% for FEV_1 and FVC, respectively) that they most likely indicate normal variability and are not clinically significant. Also, the severity of symptoms after ozone exposure was similar to the severity of symptoms after filtered air exposures, indicating that ozone did not cause noticeable effects (reviewed by Goodman *et al*., 2014). These clinically insignificant data do not provide a basis for lowering the standard.

In the second study, Schelegle *et al*. (2009) reported lung function decrements and respiratory symptoms at 0.072 ppm, but lung function was restored to baseline conditions between one and four hours after exposure ended. Because ozone has an acrid odor, the participants most likely knew when they were being exposed to ozone *vs*. filtered air, and therefore may have been more likely to report symptoms after ozone exposure.

Despite this, an independent analysis found no correlation between symptoms and the magnitude of lung function decrements in these individuals. Also, Schelegle *et al*. (2009) focused on decrements greater than 10%, and while US EPA considers a 10% cutoff reasonable for moderate lung function decrements, in healthy populations a 10% decrement, and possibly even a 15% decrement, would not be noticeable (Bieke, 2007). Moreover, studies have shown that acute lung function decrements even after higher ozone exposures (~0.2 ppm) are not predictive of, or causally associated with, ozone-induced inflammation or subsequent lung injury (*e.g.*, Blomberg *et al*., 1999).

It is also notable that in the Schelegle *et al*. (2009) study, the time period between the 0.072 ppm exposure and the control exposure was 55 days on average (ranging from 13 to 302 days). Co-exposures, seasonal changes in lung function, and the physical conditioning of subjects could have changed over this time, making it difficult to interpret results (OSHA, 2013; Pellegrino *et al*., 2005). In addition, Schelegle *et al*. (2009) used a triangular exposure profile, where exposure is increased step-wise and then decreased step-wise to achieve a target average exposure concentration. While a triangular exposure profile is more reflective of ambient ozone fluctuations compared to a constant exposure pattern, the specific patterns chosen by Schelegle *et al*. (2009) do not reflect diurnal patterns in most cities (Lefohn and Hazucha, 2005). Taken together, all of these issues with the Schelegle *et al*. (2009) study indicate that it does not provide a basis for lowering the standard.

The proposal suggests that susceptible populations, such as asthmatics, would be more responsive to acute ozone exposure than healthy adults, but there is no evidence to support this (*e.g.*, Kehrl *et al*., 1985; Linn *et al.*, 1983; Mudway *et al*.,

2001, as cited US EPA, 2013). Moreover, the exercise level maintained in these and other controlled ozone exposure studies is likely more strenuous and of a longer duration (*i.e.*, up to 6.6 hours) than most of the general US population experience, with the exception of some outdoor workers. These scenarios are especially unrealistic for the most sensitive populations, whose conditions would likely prevent them from performing exercise at the duration and ventilation rate required to produce these small decrements in lung function.

Finally, results of these and other controlled exposure studies cannot be directly extrapolated to the US population. These studies only evaluated a small number of people (fewer than 60), and only three to six subjects were ozone responders (*i.e.*, had an FEV_1 decrement over 10%) at each exposure level below the standard in each study. These studies involved people performing quasi-continuous exercise for an extended period of time at an intensity not likely achievable by sensitive individuals, such as asthmatics, and under exposure profiles that likely represent worst-case scenarios. It is not appropriate to base a standard to protect over 300 million people on reported effects in a few individuals under controlled experimental conditions.

The ultimate goal of the NAAQS is to protect the health of the general population, including sensitive groups, and not necessarily people who are able to perform quasi-continuous strenuous exercise for six hours or more while constantly exposed to outdoor ozone levels. It is unclear how chamber studies relate to more typical exposure conditions, even for sensitive individuals. EPA should conclude that these durations of exposure and near-continuous exercise levels limit the extrapolation of these results to the averaging time and numerical levels of the NAAQS. In addition, because compliance with the NAAQS is conservatively based on the single highest monitor in each urban area, the current 0.075 ppm standard provides population protection from daily ambient exposures well below 0.075 ppm and even down to 0.060 ppm (US EPA, 2014). Taken together, the new evidence indicates that the current standard is protective and should be retained, and that alternative proposed standards will not provide additional public health protection.

C. Review of Respiratory Studies

In 2006, EPA concluded that evidence for respiratory mortality from long-term ozone exposure was "suggestive" of causation, but in the proposed rule, the EPA Administrator concluded that the association with respiratory mortality was likely to be causal, whereas the evidence for all-cause and cardiovascular mortality were deemed to be suggestive of causation (US EPA, 2006, 2013). However, the evidence for respiratory mortality is limited, not consistent across studies, and not

consistent with the evidence for total mortality. Consequently, these data do not support lowering the primary NAAQS below the current standard of 75 ppb.

Studies of long-term exposures and respiratory mortality are far too limited to make a causal determination . Compared to studies of short-term ozone exposures and mortality, there are few studies that have evaluated mortality associated with long-term ozone exposures. Most studies that assessed cause-specific mortality have focused on cardiopulmonary mortality; we are only aware of three that have evaluated respiratory mortality on its own: Abbey *et al*. (1999), Jerrett *et al.*, and Lipsett *et al (2011)*. Only the studies by Abbey *et al*. and Jerrett *et al*. were referenced in the ISA, and EPA appeared to base its likely causal conclusion for respiratory mortality only on the inconsistent results in Jerrett *et al (2009)*.

Jerrett *et al*. (2009) evaluated total, respiratory, and cardiovascular mortality risks associated with long-term ozone exposure in single- and two-pollutant models (with $PM_{2.5}$) in the American Cancer Society cohort. Jerrett *et al*. (2009) reported small increases in mortality, particularly respiratory mortality, but the results were inconsistent across the mortality endpoints evaluated. For example, Jerrett *et al*. did not observe an association between ozone exposure and all-cause mortality or other cause-specific mortality outcomes. Notably, in their two-pollutant models that controlled for $PM_{2.5}$, Jerrett *et al*. found statistically significant *decreased* risks between long-term ozone exposure and all-cause and cardiovascular-related mortality. These findings raise questions regarding the respiratory mortality findings on which EPA relied in the proposed rule to calculate long-term risks.

In addition, this study has several shortcomings in its design and implementation. For example, it did not fully consider meteorological factors, such as temperature, or lifestyle factors, such as smoking, that may be independently linked to mortality risk. There are also significant uncertainties associated with the use of a single ozone value, averaged over both space and time, to represent ozone exposures for the entire population within each metropolitan area.

EPA acknowledged that environmental temperature and region of the country were significant modifiers of the reported ozone associations with respiratory mortality. Jerrett *et al*. (2009) reported a lack of statistically significant associations between ozone and mortality in the Northeast and Industrial Midwest, which had the most respiratory deaths, and in Southern California, which had the highest ozone concentrations. This lack of correlation suggests that something other than ozone is affecting mortality risks and further highlights a lack of clear support for ozone-induced respiratory mortality.

The findings by Jerrett *et al*. were not supported by the other two epidemiology studies that specifically evaluated respiratory mortality and long-term ozone exposures. Abbey *et al*. conducted a study of mortality in the Seventh-day Adventists cohort in California. The authors reported results for non-malignant respiratory, cardiopulmonary, and all-cause mortality that were not statistically significantly increased with long-term ozone exposures. Lipsett *et al*. (2011) investigated the association between ozone and mortality, including respiratory mortality, in a cohort of female teachers in California. For respiratory mortality, the authors also reported results that were not statistically significant.

Overall, EPA's conclusions in the proposed rule regarding long-term ozone exposure and respiratory mortality are not supported by the limited available evidence or the lack of association with total mortality. Thus, respiratory mortality risks from long-term ozone exposure do not support lowering the standard below 75 ppb.

III. Revision of the Secondary NAAQS at this Time Is Not Warranted.

Under CAA section 109(b)(2), EPA is to set secondary NAAQS at a level "requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air." Inherent in this charge is the requirement that EPA not set the secondary NAAQS at a level more stringent than "requisite." Clearly this directive must not be read literally to require EPA to set the secondary standard at a level where the pollutant would cause no adverse effect, no matter how small. In context, then, EPA must make a value judgment which necessarily involves balancing (even if not explicitly) the adverse effects predicted against the economic and technical feasibility of attaining a particular ambient concentration, i.e. the social impact of setting the secondary NAAQS at that level. EPA itself has said, in setting other NAAQS, that it can and should consider, among other things, the nature and severity of the risk involved and the strength of the data. These and similar considerations weigh against the proposed secondary NAAQS.

We support EPA's decision to not propose a distinct secondary standard in a "cumulative" form, but instead is proposing to retain the current form, which is identical to the form of the primary standard. Our analysis concludes that the cumulative W126 form of the standard evaluated in theEPA support documents, is redundant with the current primary form. We disagree with EPA that the analysis presented in the EPA support documents supports lowering the secondary standard. In fact, our analysis concludes that the current standard level is adequately protective and just meeting the current standard level will result in substantial reductions in ozone exposure and associated welfare risks. The forestry and potential biomass loss from ozone exposure have not been demonstrated below the

current concentrations so the current standard is adequately protective of trees and our fiber supply. Comments filed to the docket by the National Council for Air and Stream Improvement (NCASI) on March 4, 2015 and Gradient on March 16, 2015 provide more support for not changing the secondary standard and are hereby incorporated within our comments by reference.

IV. Grandfather Existing Permits Until Designations Are Complete

The proposed grandfathering provisions do not go nearly far enough in mitigating implementation challenges. They will provide relief to only a relatively small subset of Prevention of Significant Deterioriation (PSD) permit applicants as the majority of PSD permit applications are under development for a year or more before receiving a completeness determination or publication of draft permit. Moreover, some permit applicants who are sent back to the drawing board will be unable to establish that their facilities will not cause or contribute to a violation of the new NAAQS due to a lack of implementation tools for single source ozone impacts. Sources seeking to expand or locate even in projected nonattainment areas currently designated attainment will have to proceed under the PSD program, and will be required to demonstrate that project emissions do not cause or contribute to an exceedance of the standard. One significant problem is the ability of current EPA photochemical modeling tools to be used for site-specific impact analyses; we are concerned that the modeling tools a source would use for the "cause or contribute" analysis are likely unvalidated for use by individual sources, thus potentially inaccurate, and very time-consuming. For permit applicants in this situation, the proposed rule offers the promise, in the interim prior to the revised attainment designation, of using emissions offsets "to mitigate [the source's] adverse impact on the NAAQS and ultimately meet the PSD demonstration requirement" (*id.* at 75379). These offsets would have to be shown by the applicant "to compensate for the source's adverse impact at the location of violation" (*id.* at 75380). However, there are several concerns with the offset approach. First, using offsets to demonstrate an insignificant impact could require multiple modeling runs, which as discussed previously will be very difficult. Second, EPA has not clarified how these offsets can be generated—are they like NSR offsets that can be generated by nearby or upwind sources, or must they be internally generated? And if offsets are hard to obtain, then projects may not be able to proceed.

An offset program of this nature could theoretically be helpful if some of the modeling issues are addressed and if EPA has a very flexible offset program. The parameters of the program, however, appear not to have been adequately thought out. Where will the offsets come from? States implementing an NSR program commonly

operate offset banks, but in areas currently attaining the ozone NAAQS where most forest product mills are located, such banks are unlikely to exist and they take time and resources to establish. This problem would be exacerbated by a more stringent ozone NAAQS, which would likely result in more areas without any significant sources of ozone precursors being designated as nonattainment. Such areas, however, are exactly those places that could benefit most from economic development.

Given that all new and modified sources subject to either the PSD or NSR program must already address the current ozone NAAQS and use emissions controls that satisfy either the BACT or the even more stringent LAER requirement, a more workable solution would be to grandfather all PSD permit applications until final designations are made and approved for the new NAAQS.[5]

V. Economic and Other Consequences of Revising the NAAQS

A. Overview

EPA's assessment of the projected economic impact of imposing the proposed ozone NAAQS is woefully inadequate and basically assumes away a large portion of the tremendous costs to the American public of meeting the proposed standard (see section of Chamber-NAM coalition comments filed March 17on EPA's Regulatory Impact Analysis (RIA)).

In areas where EPA concluded that existing data show that the area would be designated nonattainment and additional reductions in ambient ozone would be required, EPA was unable in many cases to identify any pollution control measures that could be implemented to meet the proposed ozone NAAQS. In those cases, EPA simply speculated that unspecified emission reductions would somehow be identified to bring the area into attainment. But the very magnitude of the gap between engineering controls that EPA could postulate and the emission reductions necessary to attain the proposed ozone NAAQS gives an indication of how severe the economic impact would be beyond what EPA states.

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[5] As discussed above, EPA has adequately supported its decision to retain the current form of the secondary NAAQS, although EPA has not made an adequate case for lowering the level of the secondary standard. If EPA should, however, adopt a distinct secondary NAAQS (*e.g.*, one using a W126 indicator), the Associations support the reliance on the new source permitting program that has been developed for the primary NAAQS as a surrogate for a separate permitting program for the secondary NAAQS. See 79 Fed. Reg. at 75380.

B. Preliminary Projected Impacts of Proposed Ozone NAAQS on Forest Products Industry

Depending on the standard chosen and the implementation policies that are selected, the forest products industry could see costs as high as $3 billion. If a lower ozone NAAQS results in many more nonattainment areas than currently exist, businesses seeking air quality permits to construct new projects, modify or renew permits for existing plants will be forced to look at pollution controls that may be technically infeasible or cost prohibitive. Thus, investments that could create new jobs or maintain competitiveness are likely to be eliminated by the tougher proposed NAAQS. The costs of these lost opportunities are difficult to quantify but would be substantial.

AF&PA and AWC conducted a cost analysis to estimate the impacts of lowering the ozone NAAQS on the forest products industry based on possible control measures for ozone precursors (VOC and NO_x) for various types of emission units. Note that our analysis does not address any site-specific factors that might make installation of controls infeasible and assumes typical performance levels, which will also vary by site and application. The analysis considers both local and regional impacts and encompasses 186[6] pulp and paper mills and 206[7] wood products mills. Based on mill coordinates obtained from EPA databases, facilities located in or near projected ozone nonattainment counties (based on the levels of the standard that EPA is considering and recent available monitoring data) were identified. If we estimate costs based on 2009-2011 design values, there is a higher number of facilities that are in or near ozone nonattainment counties than if we use the 2011-2013 design values, which tend to be lower. Of course, the data will be different for the years that each state actually uses to designate nonattainment areas and will be influenced by factors such as weather and emission levels. Then, after a review of EPA's methodology in the RIA for the proposed revisions to the ozone NAAQS, we constructed an alternate approach for evaluating the impacts of a standard at a level of 65 ppb.

Both the implementation strategy EPA establishes and the level of the standard will impact the cost to the forest products industry. If the impacts are primarily on facilities located in or near non-attainment areas, the capital costs could be $100

[6] The mills that received the 2011 EPA pulp and paper Information Collection Request (ICR) in support of the Risk and Technology Review (RTR) of the pulp and paper NESHAP and NSPS.
[7] Identified using a 2008 EPA list of major source wood products facilities. Facilities known to no longer be in operation were not considered.

million to over $1 billion and the annual costs could be $20 to 300 million, depending on the level of the standard selected. If the impacts are more far reaching and involve reduction in transport of NO_x emissions on a regional basis from large industrial sources as we would expect given that EPA fails to find enough emission reductions in its own Regulatory Impact Analysis, the costs to the forest products industry alone could be $3 billion in capital and almost $1 billion in annual costs.

AF&PA and AWC initially developed a tiered approach to estimating impacts to forest products industry sources for 3 levels of a revised ozone standard (70, 65, and 60 ppb). The tiers in our analysis are meant to simulate the various mechanisms by which sources could have to implement measures to reduce their impact on local and regional ambient ozone concentrations. We also developed an impacts estimate assuming a more regional approach to applying controls, similar to the approach EPA used in the RIA, where it assumed emissions reductions would occur across a large portion of the country to achieve a lower ozone standard. The following paragraphs describe the analysis.

Tier 1 of our analysis focuses on sources projected to be in ozone nonattainment counties at the various levels of the standard (based on the latest available monitoring data) and applies various control measures for NO_x and VOC. Because the factors contributing to monitored ozone vary greatly by area, we made no assumptions as to what areas might have lower monitored impacts and come back into attainment over the next 5 years. Tier 2 focuses on sources within 15 km of projected nonattainment counties and applies various control measures for NO_x and VOC (e.g., where the nonattainment area would be expanded beyond the monitored county using an MSA-type approach or by focusing on large sources adjacent to the county).

We then developed a regional analysis similar to that described in the RIA for a level of the standard at 65 ppb or below. Figure 4-6 in the RIA shows the counties where EPA applied known NOx controls to sources emitting 25 tpy or more. However, EPA also indicates that in the East, they also need “unknown controls” to be able to attain a standard of 65 ppb or below and we believe there will be additional states that will require NOx controls as RACT in order to address transport concerns and/or as part of an attainment strategy for the year 2020. Therefore, our analysis applies controls in the states shown on Figure 4-6 as well as the Southeastern states of NC, SC, GA, and AL.

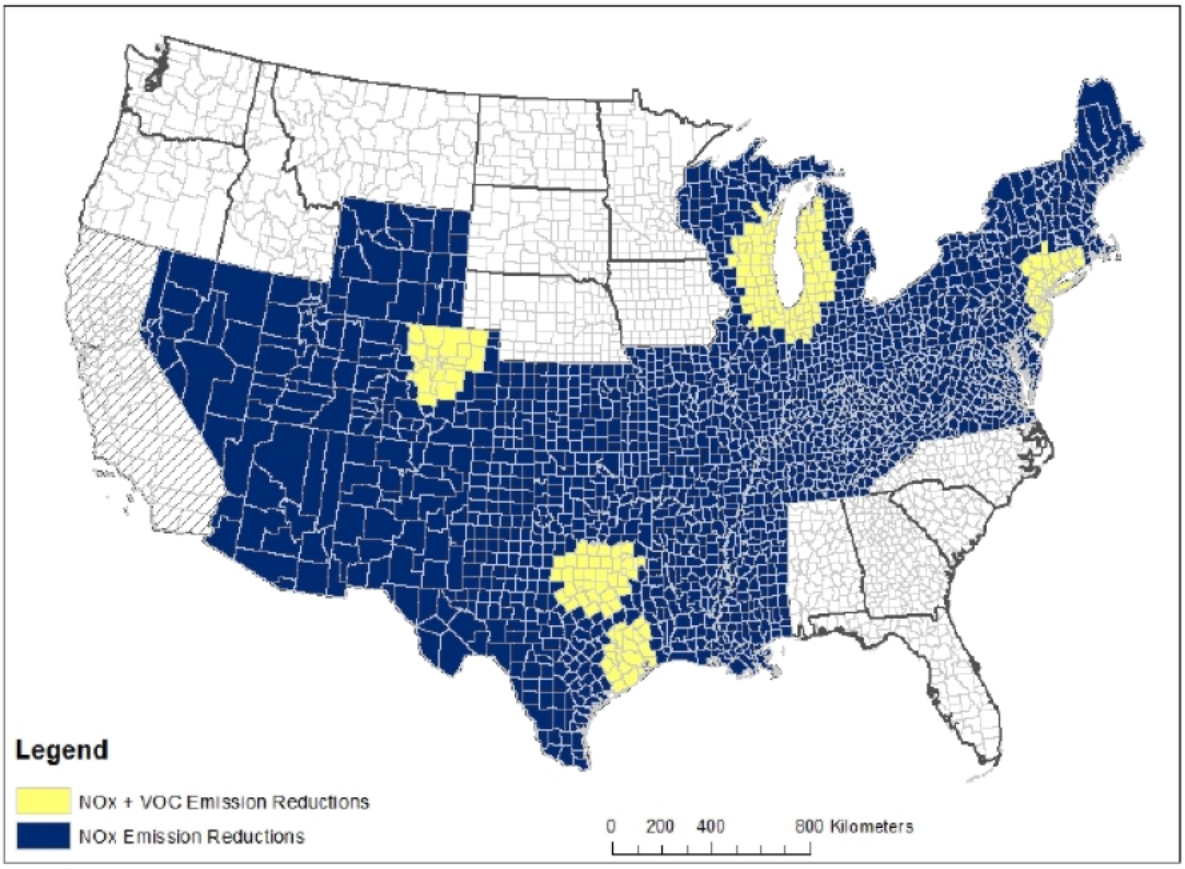


Figure 4-6. Counties Where Emissions Reductions Were Applied to Demonstrate Attainment with 65 and 60 ppb Ozone Standards in the 2025 Analyses

Table 1. The number of forest products facilities in and near projected non-attainment areas for each of the 3 levels of the standard being considered (70, 65, and 60 ppb).

Tier (Based on 2011-2013 design values)	Number of Pulp and Paper Mills (out of 186)	Number of Wood Products Mills (out of 206)
Ozone NAAQS at 70 ppb		
Tier 1 - Mills in nonattainment counties	35	4
Tier 2 – Additional mills within 15 km of nonattainment counties	19	8
Total Tier 1 and 2 mills	54	12

Tier (Based on 2011-2013 design values)	Number of Pulp and Paper Mills (out of 186)	Number of Wood Products Mills (out of 206)
Ozone NAAQS at 65 ppb		
Tier 1 - Mills in nonattainment counties	52	7
Tier 2 - Additional mills within 15 km of nonattainment counties	26	22
Total Tier 1 and 2 mills	78	29
Ozone NAAQS at 60 ppb		
Tier 1 - Mills in nonattainment counties	61	19
Tier 2 - Additional mills within 15 km of nonattainment counties	41	32
Total Tier 1 and 2 mills	102	51
Regional Analysis for an Ozone NAAQS at 65 ppb		
Mills Required to Implement Additional Controls	119	71

The sources and control strategies we identified for our tiered analysis were based on projects considered in the past by mills (e.g., as part of expansion projects, BACT analyses, or BART analyses) and review of various EPA documents that discussed candidate control measures. However, the analysis did not determine whether a control was technically or economically feasible for any specific site. The following measures for NO_x and VOC were considered in the analysis:

- NO_x controls on industrial boilers that do not already have them (based on EPA's Boiler MACT database)
  - Over-fired air for solid fuel boilers at 70 ppb
  - Oxygen trim and staged combustion air for gas and liquid boilers at 70 ppb
  - SNCR for solid fuel boilers at 65 ppb
  - Low NO_x Burners and Flue Gas Recirculation for gas and liquid boilers at 65 ppb
- Combustion controls like quaternary air to reduce NOx emissions from recovery furnaces at pulp and paper mills
- SNCR for NO_x control on energy systems at wood products plants

- Installation of an RCO at a mill to reduce VOC emissions so a project avoids NNSR

For the tiered analysis, we did not include costs for lowering NOx emissions from lime kilns because lime kilns are not typically large NO_x emitters, this technology is not likely as RACT, and many facilities have recently installed new natural gas burners in their kilns that are low-NO_x burners. We did not consider installation of retrofit catalysts on engines in our analysis because most engines at forest products facilities only operate on an emergency basis, are not large emitters of NO_x, and any existing engines would not likely be covered under RACT requirements. We also did not cost pollution prevention type activities such as reformulation of coatings. Although the cost of permitting would also increase for facilities located in new nonattainment areas, we did not include those costs in this analysis because the cost of permitting is typically much less than the cost of additional controls(even though offset costs for projects that trigger NNSR could be significant).

For the regional analysis constructed similar to EPA's, we assumed pulp and paper mill boilers would install SCR and wood products facility boilers would install SNCR. Assumptions about the feasibility and performance of NOx emission reduction from SCR and SNCR are very speculative especially for multi-fuel boilers where these controls have not been consistently demonstrated across the range of operating conditions, designs, and processes. Based on the discussion of known controls in the RIA, we also assumed some mills would install LNB on lime kilns, implement NOx reductions on recovery furnaces, install SCR on standalone NCG incinerators, install SNCR on wood products mill energy systems, and install controls to avoid NNSR. The largest impact in the regional analysis is the widespread application of SCR to pulp and paper mill boilers.

Based on the input of AF&PA and AWC member companies and a review of several published EPA and industry documents, we developed median capital and operating cost estimates for each control strategy. Capital and operating cost estimates are not intended to represent a worst case analysis. Rather, they represent median costs for the various scenarios based on published reports, industry information on specific project costs, EPA reports or control device fact sheets, actual BACT or BART analyses submitted to permitting agencies, or recent contacts with control device vendors. Annualized costs are estimated based on EPA's standard capital recovery factor and our estimated annual operating costs.

For each control strategy, we examined the probability of that strategy being implemented and we estimated the percentage of facilities in the tier that would apply the control strategy. (Of course any control strategy would have to be evaluated on

a case-specific basis.) Lowering the probability for a particular strategy lowers the estimated cost, as the total cost is calculated as follows:

Total Cost = Probability * cost per emission unit * number of units per facility * number of facilities

We estimated low probabilities for strategies that would not widely apply across the industry, that would not likely be chosen as RACT by a state, or that might not be technically feasible or pose safety issues. For example, we assigned a 10% probability that a facility might install an oxidizer to control VOC emissions and avoid non-attainment new source review because many facilities are already well controlled under MACT. We estimated low percentages of facilities that would apply a control option in cases where there may be technical feasibility issues or where we thought baseline emissions were already well controlled. For example, we estimated a low number of facilities could apply NO_x controls on recovery furnaces due to technical feasibility factors. In addition, the analysis did not distinguish the severity of the nonattainment designation. Even greater emissions reductions would be needed for mills in or near moderate, serious or severe nonattainment designations. Therefore, the cost projections are likely to be conservative.

Table 2 summarizes the cost estimates for the forest products industry for each proposed level of the standard. The cost estimate for a 60 ppb standard is dramatically higher than the other levels due to both the high number of facilities that would be in nonattainment areas and due to the more stringent (and more expensive) level of NO_x control selected for this analysis (e.g., SCR control for industrial boilers). These costs would be in addition to the capital mills are already spending to comply with Boiler MACT, which does not regulate NO_x emissions. Note that the costs in this analysis are highly dependent on the actual ozone design values since a state-by-state approach is assumed, where emissions controls are only applied in non-attainment areas as RACT or to avoid NNSR. The values reflect an analysis based on 2011-2013 design values but they would be higher if 2009-2011 data were used, for example, or if parts of the country experience warmer summers than the past three years.

Table 2. The estimated costs for each proposed NAAQS level for forest products facilities in and near projected non-attainment areas.

Tier	NAAQS set at 70 ppb	NAAQS set at 65 ppb	NAAQS set at 60 ppb
Estimated Capital Cost			
Tier 1	$66 million	$102 million	$1.1 billion
Tier 2	$57 million	$81 million	$951million
Total	**$123 million**	**$184 million**	**$2.0 billion**
Estimated Annual Cost			
Tier 1	$12 million	$65 million	$325 million
Tier 2	$12 million	$43 million	$299 million
Total	**$24 million**	**$108 million**	**$624 million**

Table 3 summarizes the cost estimates for the forest products industry assuming a regional approach to emissions control at an ozone standard of 65 ppb or below. The costs in this alternate analysis assume that widespread emissions reductions are required as an effort to reduce ozone concentrations and emissions transport over a large portion of the country (e.g., implementation of the "good neighbor" clause by states), regardless of whether sources are actually located in areas designated as non-attainment. This approach is similar to EPA's RIA approach, as mentioned earlier.

Table 3. The estimated costs of an ozone standard of 65 ppb or below based on a regional analysis

Cost	Pulp and Paper	Wood Products	Total Forest Products
Capital Cost	$2.8 billion	$87 million	$2.9 billion
Annual Cost	$950 million	$39 million	$990 million

We were not able to quantify costs for projects that are cancelled because they cannot be permitted in a non-attainment area because offsets are not available or additional controls make the project infeasible. Of course, if facilities do not go forward with projects because they cannot permit them in ozone nonattainment areas or find offsets in attainment areas, there would be lost potential economic value to companies, their communities and governments for projects that would otherwise have had a return on investment that are not conducted. These opportunity costs could be significant and could even exceed a billion dollars.

While EPA cannot consider costs when setting the NAAQS, the costs of mistakenly tightening the standard are significant when there is such scientific uncertainty. EPA's own cost benefit analysis would make the ozone rule one of the most expensive air regulations ever at over $15 billion. More complete industry assessments put the economy-wide annual cost ten times higher with significant energy cost increases and job losses (see NERA study conducted for NAM). The proposed revisions could place most of the country in nonattainment, putting five times more paper and wood product mills at risk and having to spend close to three billion dollars to comply while losing business opportunities due to permit restrictions. Our industry already has invested billions of dollars to help make our air cleaner while making products essential for everyday life.

C. PM Co-Benefits and Greenhouse Gas Disbenefits Must be Considered

A substantial portion of the benefits that EPA claims for the proposed primary ozone NAAQS comes not from reducing concentrations of ground-level ozone but from reductions in fine particulate matter that EPA speculates would be a side-effect of controls that sources would have to adopt to reduce emissions of the ozone precursor NO_x. This seemingly ignores the fact that EPA already sets primary NAAQS for $PM_{2.5}$ at a level requisite to protect public health with an adequate margin of safety. Additionally, EPA has numerous other regulatory initiatives, such as hazardous air pollutant emission standards for boilers, utilities, and others, that will produce substantial reductions in ambient $PM_{2.5}$ exposure regardless of what happens with the ozone NAAQS. There is, therefore, no sense to claiming health benefits from reductions in ambient $PM_{2.5}$ concentrations as a result of lowering the ozone NAAQS (even if those lower ambient $PM_{2.5}$ concentrations were necessarily an outcome of lowering the ozone NAAQS, which they are not).

EPA also has not given needed consideration to the effects that lowering the primary and secondary ozone NAAQS could have on greenhouse gas emissions. Often, requirements to reduce volatile organic compound emissions to try to reduce ambient ground-level ozone concentrations have translated into requirements for sources to collect and thermally oxidize those VOCs. Burning large quantities of natural gas to ensure thermal destruction of generally low-concentration, high-flow gases captured from VOC-using or –generating processes releases millions of metric tons of carbon dioxide. It is worth noting that these same controls could increase NOx emissions exactly in the areas that are VOC-rich so the additional NOx formed, even with NOx reduction strategies in place, could result in more ozone formation. This trade-off was documented during the development of the Plywood and

Composite Wood Panel MACT but ignored when setting the emission limits for VOC Hazardous Air Pollutants. Finally, a new rule that forces even more gas-burning to produce even further reductions in VOC emissions beyond those already achieved or to be achieved under the existing ozone NAAQS may not, on balance, be worth the adverse effect on greenhouse gas emissions. It would be arbitrary and capricious for EPA to impose more stringent ozone NAAQS without carefully considering this effect.

In addition, in many instances attempting to meet the new ozone NAAQS would require combustion sources to reduce their NO_x emissions. This would encourage and in some cases force sources burning solid fuel like coal or biomass, as well as those burning oil, to switch to natural gas. This would have important implications for energy supply and cost. Moreover, because burning biomass such as wood residuals does not contribute to higher atmospheric carbon dioxide concentrations, since carbon dioxide was removed from the atmosphere by the tree to form the biomass, a new regulation that has the effect of causing sources to switch away from burning biomass towards burning other carbon-based fuels will cause a net increase in atmospheric carbon dioxide. EPA has asserted that current carbon dioxide emissions have negative implications for both health and welfare, and if so such effects must not be ignored by EPA in deciding what level of ozone NAAQS is requisite to protect human health and welfare.

VI. Conclusion

As EPA and the courts have acknowledged, while "the only concentration for ozone and PM that is utterly risk-free, in the sense of direct health impacts, is zero," *American Trucking Associations v. EPA*, 175 F. 3d 1027, 1034 (D.C. Cir. 1999), the "CAA does not require the Administrator to establish a primary NAAQS at a zero-risk level," 75 Fed. Reg. at 2940, citing *Lead Industries Association v. EPA*, 647 F.2d at 1156 n.51. Rather, the "question is one of degree." *American Trucking Associations*, 175 F.3d at 1037. Thus, establishing primary NAAQS necessarily involves value judgments (which is part of the reason why EPA cannot simply defer to CASAC) and weighing the severity of a predicted health effect and the certainty of the information from which that health effect is predicted. In that regard, EPA should and must consider the context, including the societal consequences of setting the NAAQS at a particular level. The lowering of the primary NAAQS that EPA is considering would, even under the most optimistic assumptions, cost the nation $15 billion dollars a year, and as much as $140 billion according to the National Association of Manufacturers (see March 2015 NERA report). At least at the lower end of the range EPA has proposed, the NAAQS is approaching background levels, especially in parts of the country where coniferous trees emit significant amounts of VOCs. And

there is even more uncertainty as to how the proposed secondary NAAQS would compare to background levels in rural areas.

In this context, it is critical for EPA to consider the severity of the health effects and the strength of the data on which those projected effects are based. Decrements in lung function without clear health impacts, or statistical correlations of ozone levels with, e.g., emergency room visits where the population was exposed to elevated levels of other pollutants as well, does not constitute evidence of the kind of significant, likely health effects that would justify revising the NAAQS at this time, with tremendous economic and social consequences.

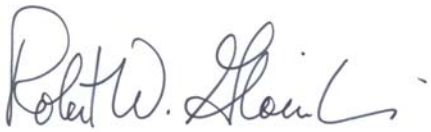
* * * * * *

In summary, in light of the significant scientific uncertainties and large economic impacts, AF&PA and AWC recommend that EPA retain the current standard of 75 parts per billion as protective of public health and not set a different secondary standard.

If you have any questions about these comments, please contact Tim Hunt, AF&PA and AWC's Senior Director, Air Quality Programs, at (202) 463-2588 or at tim_hunt@afandpa.org.

Sincerely,

Paul R. Noe
Vice President for Public Policy
American Forest & Paper Association



Robert W. Glowinski
President
American Wood Council

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