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U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20004

February 10, 2023

Re: Reconsideration of the National Ambient Air Quality Standards for Particulate Matter, 88 Fed. Reg. 5558 (January 27, 2023)

Docket ID No. EPA-HQ-OAR-2015-0072

Via E-Mail to https://www.regulations.gov

Ladies & Gentlemen:

We are writing on behalf of the members of Unions for Jobs & Environmental Progress ("UJEP"), an *ad hoc* association of energy-related labor unions. Our member unions represent workers in electric power, transportation, coal mining, construction, and other energy-related industries.

UJEP is an independent ad hoc association of labor unions involved in energy production and use, transportation, engineering, and construction. Our members are: International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers Union; International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers; International Brotherhood of Electrical Workers; SMART Transportation Division; Transportation • Communications International Union, IAM; United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada, and United Mine Workers of America. For more information about us, visit www.ujep4jobs.org.

Our Position in Brief

UJEP members' jobs and economic wellbeing will be affected by U.S. EPA's decisions on the proposed reconsideration of the national ambient air quality standards for fine particulate matter (PM2.5).

In this rulemaking, EPA is proposing to revise the primary annual PM2.5 standard by lowering the level to within a range of 9 to 10 micrograms per cubic meter (ug/m3), while taking comment on alternative annual standard levels down to 8.0 µg/m3 and up to 11.0 µg/m3. The Agency proposes to retain the current primary 24-hour PM2.5 standard of 35 ug/m3 and the primary 24-hour PM10 standard. The Agency also proposes not to change the secondary 24-hour PM2.5 standard, secondary annual PM2.5 standard, and secondary 24-hour PM10 standard.

In previous comments and at meetings at OMB, we supported the agency's December 2012 decision[1] to reduce the primary PM2.5 standard from its previous level of 15 ug/m3, based on then-prevailing health science. Here, we support the agency's decision to lower the primary standard from its current level of 12 ug/m3 to a level of 10 ug/m3, representing a 17% reduction in the level of the standard.

Our view reflects subsequent advances in health science and the unanimous recommendation of the Clean Air Science Advisory Committee (CASAC) that the current standard is not adequately protective of public health and should be lowered. For the reasons discussed below, including a lack of agreement within CASAC on a specific level of the standard, we do not support the proposed reduction of the standard to a level of 9 ug/m3 or lower.

Our concerns are focused on the range of opinions expressed by CASAC members on the appropriate level of a revised primary standard, along with the substantial increase in prospective nonattainment areas that would result if a standard of 9 ug/m3 were chosen. We believe that EPA may have understated the extent of prospective nonattainment areas under a revised standard by its reliance on extensive deployment of future "unknown" control technologies. Nonattainment designation can have deleterious effects on income and employment by dramatically increasing the difficulty of permitting and operating new industrial facilities as well as obtaining regulatory

[1] 78 FR 3085 (Jan. 15, 2013).

approvals for major construction projects.[2]

CASAC's March 18, 2022 Review of EPA's Policy Assessment of PM2.5 Standard Reconsideration: A Committee Divided

EPA reconstituted the Clean Air Science Advisory Committee (CASAC) in 2021 by removing most of its members, many appointed by the previous Administration. The new CASAC undertook a reconsideration of the previous Administration's decision to retain the 2012 annual and 24-hour standards for PM2.5.[3] Its findings and recommendations are reflected in a March 18, 2022 letter to the EPA Administrator.[4] The Committee reached consensus on the need to lower the current annual standard to better protect public health, but did not agree on any specific level for the standard. A majority favored revising the standard to within a range of 8 to 10 ug/m3, consistent with the position taken by EPA staff. A minority of members indicated a preference for a somewhat higher standard in the range of 10-11 ug/m2. There was no specific recommendation from CASAC for setting the annual standard at a level such as 8 or 9 ug/m3.

As noted below, CASAC members acknowledged that <u>any</u> reduction of the level of the annual standard would disproportionately benefit Communities of Color due to their relatively greater exposure to high levels of PM2.5. This factor may be taken into account in the Administration's decisions respecting a downward revision of the primary

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[2] *See*, M. Greenstone, The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures, 110 *Jrnl. Pol. Econ*. No. 6 (U. Chicago Press):

> This paper estimates the impacts of the Clean Air Act's division of counties into pollutant-specific nonattainment and attainment categories on measures of industrial activity obtained from 1.75 million plant observations from the Census of Manufactures. Emitters of the controlled pollutants in nonattainment counties were subject to greater regulatory oversight than emitters in attainment counties. The preferred statistical model for plant-level growth includes plant fixed effects, industry by period fixed effects, and county by period fixed effects. The estimates from this model suggest that in the first 15 years in which the Clean Air Act was in force (1972–87), nonattainment counties (relative to attainment ones) lost approximately 590,000 jobs, $37 billion in capital stock, and $75 billion (1987 dollars) of output in pollution-intensive industries. These findings are robust across many specifications, and the effects are apparent in many polluting industries.

[3] 85 FR 82684, December 18, 2020.

[4] EPA-CASAC-20-002 (March 18, 2022).

PM2.5 standard.

CASAC March 18, 2022 Summary

"Regarding the level of the annual PM2.5 standard, the majority of CASAC members find that an annual average in the range of 8-10 µg/m3 would be appropriate. The range of 8-10 µg/m3 is supported by placing more weight on: epidemiologic studies in the United States that show positive associations between PM2.5 exposure and mortality with precision among populations with mean concentrations likely at or below 10 µg/m3; epidemiologic studies in the United States showing such associations at concentrations below 10 µg/m3 and below 8 µg/m3; Canadian studies, some of which show such associations at concentrations below 10 µg/m3 and below 8 µg/m3; a meta-analysis of 53 studies, 14 of which report such associations at concentrations below 10 µg/m3 down to 5 µg/m3; protection of at-risk demographic groups; evidence consistent with no threshold and a possible supra-linear concentration-response function at lower levels; recognition that the use of the mean to define where the data provide the most evidence is conservative since robust data clearly indicate effects below the mean in concentration-response functions; and consideration that people are not randomly distributed over space such that populations in neighborhoods near design value monitors are exposed to the levels indicated at those monitors and likely to be more at risk.

A minority of CASAC members find that a range of 10-11 µg/m3 for the annual PM2.5 standard would be appropriate. This range emphasizes that there are few key epidemiologic studies (and only one key U.S. study) that report positive and statistically significant health effect associations for PM2.5 air quality distributions with overall mean concentrations below 9.6 µg/m3 and the fact that design values are generally higher than area average exposure levels. Key U.S. epidemiologic studies indicate consistently positive and statistically significant health effect associations based on air quality distributions with overall mean PM2.5 concentrations that range between 9.3 and 12.2 µg/m3 for hybrid modeling with population-weighted averages. The form of the standard and the way attainment with the standard is determined (i.e., highest design value in the core-based statistical area) are important factors when determining the appropriate level for the standard. According to the Draft PA, the area annual design values are generally higher than the study means by 14-18% for hybrid modeling with population-weighted averages. Applying these percentages to the concentration ranges above result in values that are all over 10.6 µg/m3, with most values over 11.0 µg/m3. Also, the recommendation of 10-11 µg/m3 emphasizes large

uncertainties in the risk assessment, potential overestimates in the number of prevented deaths using the risk assessment approach of adjusting air quality to simulate "just meeting" the current standard, and uncertainties related to co-pollutants and confounders." CASAC at 3. (Emphasis added.)

Caveats from Individual CASAC Members

Dr. James Boylan (GA EPD)

Mark Frampton and I have the unique experience of being on the CASAC that reviewed both the PM NAAQS in 2019-2020 and the PM NAAQS Reconsideration in 2021-2022. In the 2019-2020 review, the chartered CASAC consisted of one consultant, four state/local air pollution control agency representatives, and one university professor. The seventh CASAC member resigned during the deliberations. The CASAC did not reach consensus on the adequacy of the current annual PM2.5 NAAQS. In the end, both the "majority" and "minority" perspectives were included in the letter to the Administrator and the consensus response to charge questions.

In the 2021-2022 reconsideration, the chartered CASAC consisted of one state air pollution control agency representative and six university professors, and the PM panel consisted of two state air pollution control agency representatives and twenty university professors. In this review, the CASAC did not reach consensus on the level of the annual PM2.5 NAAQS and the adequacy of the daily standard. This time, the "majority" and "minority" roles were reversed compared to the 2019-2020 PM review. During the current deliberations, some CASAC members and panel members suggested that only the "majority" perspectives be included in the letter to the Administrator and the consensus response to charge questions and the "minority" perspectives be restricted to individual comments. After much debate, both perspectives were preserved in the main documents. ... CASAC at A-16

In Chapter 3, the main question I would like answered is "How many premature deaths will be prevented if the annual standard is lowered from 12.0 µg/m3 to a lower level?" The risk assessment is the best way to estimate PM2.5-associated health risks for various alternative standards. EPA's approach evaluates the change in risk associated with moving from PM2.5 air quality "just meeting" the current standards (12/35) to "just meeting" alternative annual and/or 24-hour standards (10/30). While this approach is appropriate for CBSAs that are currently above the current standards, this approach is not appropriate for CBSAs that are

currently below the current standards and results in estimated reductions in PM2.5-accociated mortality that are significantly overestimated compared to the actual number of prevented deaths. For example, the 2014-2016 annual maximum PM2.5 design values (Table C-3) for the Atlanta CBSA and New York CBSA were 10.38 µg/m3 and 10.20 µg/m3, respectively. The EPA approach increases these design values to 12.0, then reduces them to 11, 10, 9, and 8 to calculate the reductions in PM2.5-accociated mortality at each alternative standard. In these two cities alone, the EPA approach calculates thousands of deaths prevented as you go from 12 to 11, 11 to 10, 10 to 9, and 9 to 8. However, the 2018-2020 PM2.5 design values for the Atlanta CBSA and New York CBSA are 9.5 µg/m3 and 8.7 µg/m3, respectively. This means that a new standard of 11 µg/m3 or 10 µg/m3 would result in no actual deaths being prevented in those CBSAs. This example was given for Atlanta and New York (which accounts for 25% of the total study area population) but is applicable to many of the other CBSAs in the study area that currently have 2018-2020 annual design values that are below 10 µg/m3 or 9 µg/m3. As a result, the number of deaths that would be prevented at lower standards could be overestimated by a factor of two, or more. **In order to accurately estimate the number of actual deaths that will be prevented if the standard was lowered, the starting point for the risk analysis for each CBSA that is already below the current PM2.5 NAAQS needs to be the 2018-2020 PM2.5 design values, not the current NAAQS. (**Underlined emphasis added**.)** CASAC at A-22. ...

5. What are the Panel's views on preliminary conclusions regarding adequacy of the current primary PM2.5 standards and on the public health policy judgments that support those preliminary conclusions?
a. Does the discussion provide an appropriate and sufficient rationale to support the preliminary conclusion that it is appropriate to consider retaining the current primary 24-hour PM2.5 standard, without revision, in this reconsideration?

Yes, EPA provides sufficient rationale to retain the current primary 24-hour PM2.5 standard, without revision. The risk assessment not only accounts for the level of the standard, but also accounts for the form of the standard and the way attainment with the standard is determined (i.e., highest design value in the CBSA). The risk assessment indicates that the annual standard is the controlling standard across most of the urban study areas evaluated and revising the level of the 24-hour standard is estimated to have minimal impact on the PM2.5-associated risks. Therefore, the annual standard can be used to limit both long- and short-term PM2.5 concentrations. ... CASAC at A-23

b. Does the discussion provide an appropriate and sufficient rationale to support the preliminary conclusion that it is appropriate to consider revising the current primary annual PM2.5 standard in this reconsideration?

Yes, EPA provides sufficient rationale to revise the current primary annual PM2.5 standard to a level in the range of 10.0 to 11.0 µg/m3. To simply set the standard at the same level as the mean PM2.5 concentration used in epidemiological studies that indicate significant health effect associations would be overly conservative because it does not account for the full distribution of PM2.5 concentrations across the CBSA. Rather, the form of the standard and the way attainment with the standard is determined (i.e., highest design value in the CBSA) must be considered when determining the appropriate level for the standard. (Emphasis added).

Most key U.S. epidemiologic studies indicate consistently positive and statistically significant health effect associations based on air quality distributions with overall mean PM2.5 concentrations at or above 9.9 µg/m3 (monitor-based studies), 9.3 µg/m3 (hybrid modeling with population-weighting), and 8.1 µg/m3 (hybrid modeling without population-weighting). According to the PA, the area annual design values are generally higher than the study means by 10-20% for monitor-based studies, 14-18% for hybrid modeling with population-weighting studies, and 40-50% for hybrid modeling without population-weighting studies. Therefore, the range of design values associated with 9.9 µg/m3 (monitor-based studies) would be 10.9-11.9 µg/m3; 9.3 µg/m3 (hybrid modeling with population-weighting) would be 10.6-11.0 µg/m3; and 8.1 µg/m3 (hybrid modeling without population-weighting) would be 11.3-12.2 µg/m3. Based on this information, an annual standard in the range of 10.6-12.2 µg/m3 is appropriate. In order to protect public health with an adequate margin of safety, an annual standard in the range of 10.0-11.0 µg/m3 is recommended. In addition, many accountability studies that report public health improvements have starting concentrations within that range. An annual standard of 10.0 µg/m3 would result in long-term mean PM2.5 concentrations in the range of 8.3 to 9.1 µg/m3 (well below 9.9 µg/m3), while an annual standard of 11.0 µg/m3 would result in long-term mean PM2.5 concentrations in the range of 9.2 to 10.0 µg/m3 (mostly below 9.9 µg/m3). CASAC at A-24. (Emphasis added.)

Dr. Jane Clougherty (Drexel U. School of Public Health)

Critical point on p. 3-197 (line 3-6): "meeting a revised annual standard with a lower level may also proportionally reduce exposure and risk in Black populations slightly more so than in White populations in simulated scenarios just meeting alternative annual standards."
- As such, reducing the annual standard would produce GREATER proportional exposure reductions for Blacks than Whites.
- Thus, this represents an opportunity to reduce overall population risk, and to *reduce a known disparity*, which is an important & valuable opportunity, and should be emphasized.

Dr. Jeremy Sarnat (Emory University)

I support the EPA's general summary that the evidence provided in the supplement to the 2019 PM ISA and policy implication outlined in the current Policy Assessment 'support and in some instances strengthen' the evidence relating to causal determination for many of the health outcome categories considered. Specifically, I believe the additional epidemiologic evidence conducted in locations with mean fine PM concentrations below the current standards, the causal modeling findings, and the results from the cited accountability studies firmly support a reconsideration of the current PM NAAQS and their ability to adequately protect human health. The comments below largely focus on minor observations not likely to impact my overall impression of this chapter or collective summary for the Policy Assessment. ...

Uncertainties regarding the shape of the C-R (concentration-response) function at low concentrations is both critical and currently unresolvable. In this PA, the EPA authors take and clearly articulate what I feel is an appropriately cautious view of these observed functions at low concentrations due to the '[r]elatively low data density in the lower concentration range, the possible influence of exposure measurement error, and variability among individuals with respect to air pollution health effects. These sources of variability and uncertainty tend to smooth and "linearize" population-level concentration-response functions and thus could obscure the existence of a threshold or nonlinear relationship'. This language is good and differs somewhat from the corresponding interpretation of the science found In the Supplement to the PM ISA. (see Fig 3-17 and discussion from the Supplement to the ISA)." CASAC at A-80 (emphasis added.)

UJEP notes that the majority of CASAC members supported a revision of the primary standard to a level within a range of 8 to 10 ug/m3. Unlike some of the "minority" committee members, the majority did not offer specific quantified support for

a standard falling within this range. We therefore are disposed to assign greater weight to the quantified estimates of "minority" members who suggested more specific levels of the standard based on quantitative assessments.

Significant Reductions of Emissions Will be Needed to Meet Any of the Proposed New PM2.5 Standards: Nearly Three Times More to Meet the 9 ug/m3 Standard than the 10 ug/m3 Standard

EPA's Regulatory Impact Analysis (RIA) for the proposed revision to the ambient standards for particulate matter offers useful information for assessing the impacts of the alternative standards.[5] The data also suggest the quantity of emission reductions needed to achieve the alternative standards in 2032 by region and by "known" and "unknown" future control technologies.

We view the RIA data as strongly supporting the choice of a 10 ug/m3 standard with no change to the 24-hour 35 ug/m3 standard. We are concerned that a lower annual standard of 8 or 9 ug/m3 would create extensive new areas of nonattainment in the industrialized eastern United States, potentially impeding many of the thousands of projects to be developed with the support of the bipartisan Infrastructure and Jobs Act.

Summary of $PM_{2.5}$ Emissions Reductions Needed, In Tons/Year and as Percent of Total Reduction Needed Nationwide, for Alternative Primary Standard Levels of 10/35 ug/m^3, 10/30 ug/m^3, 9/35 ug/m^3, and 8/35 ug/m^3 in 2032

Area	**10/35**	**10/30**	**9/35**	**8/35**
Northeast	1,068	1,221	6,996	30,843
Southeast	474	474	4,088	18,028
West	820	7,852	3,078	9,708
CA	10,128	12,230	17,750	28,293
Total	12,490	21,776	31,912	86,872

Area	**10/35**	**10/30**	**9/35**	**8/35**
Northeast	9%	6%	22%	36%
Southeast	4%	2%	13%	21%
West	7%	36%	10%	11%
CA	81%	56%	56%	33%

In estimating the potential need for additional emission reductions to meet the alternative standards, EPA dramatically increased the assumed marginal cost per ton removed from $15,000-$20,000 to a level of $160,000 per ton while lowering the

[5] EPA, Regulatory Impact Analysis for the Proposed Reconsideration of the National Ambient Air Quality Standards for Particulate Matter (December 2022).

threshold size of control sources to 5 tons per year.[6] This cost increase was intended to include road paving and other measures needed to meet the alternative standards.

Emission Reductions Achievable by Existing Technologies, Up to $160,000 Per Ton Removed

PM2.5 Estimated Emissions Reductions from CoST by Area for the Alternative Primary Standard Levels of 10/35 ug/m^3, 10/30 ug/m^3, 9/35 ug/m^3, and 8/35 ug/m^3 in 2032 (tons/year)

	PM2.5 Emissions Reductions			
Area	**10/35**	**10/30**	**9/35**	**8/35**
Northeast	1,070	1,222	6,334	19,142
Northeast (Adjacent Counties)	0	0	1,737	15,440
Southeast	475	475	3,040	12,212
Southeast (Adjacent Counties)	0	0	194	4,892
West	224	2,206	947	4,711
CA	1,792	2,481	2,958	4,925
Total	3,561	6,384	15,210	61,321

Note: Totals may not match related tables due to independent rounding.

The RIA indicates that the estimated PM2.5 emissions reductions from the control strategies do not fully account for all the emissions reductions needed to reach the proposed and more stringent alternative standard levels in some counties in the northeast, southeast, west, and California. By area, The table below includes a summary of the estimated emissions reductions still needed after control applications for the alternative standards analyzed.

PM2.5 Emissions Reductions Still Needed by Area for the Alternative Primary Standard Levels of 10/35 ug/m^3, 10/30 ug/m^3, 9/35 ug/m^3, and 8/35 ug/m^3 in 2032 (tons/year)

Region	**10/35**	**10/30**	**9/35**	**8/35**
Northeast	0	0	238	6,741
Southeast	0	0	994	4,780
West	595	5,651	2,132	5,023
CA	8,336	9,749	14,793	23,368
Total	8,931	15,400	18,157	39,912

Based on these estimates, the Northeast and Southeast can meet the 10/ug/m3 standard after the application of available controls in 2032. No region can meet the 9 ug/m3 standard after application of available controls, and the quantity of emission

[6] EPA RIA at ES-10..

reductions still needed to meet the 9 ug/m3 standard (18,157 tons) is greater than the reductions from application of available technologies (15,210 tons) costing up to $160,000/ton. California and the West show the greatest need for as-yet unknown technologies.

EPA projects significant net health benefits from both the 10 ug/m3 standard and the 9 ug/m3 standard, as indicated by the tables below:

Summary of Present Values and Equivalent Annualized Values for Estimated Monetized Compliance Costs, Benefits, and Net Benefits of the Control Strategies Applied Toward the Proposed Primary Alternative Standard Level of 10/35 µg/m3 (millions of 2017$, 2032-2051, discounted to 2022 using 3 and 7 percent discount rates)

	Costs		Benefits		Net Benefits	
2032-2051	3%	7%	3%	7%	3%	7%
Present Value	$200,000	$91,000	$1,100	$540	$200,000	$90,000
Equivalent Annualized Value	$13,000	$8,500	$72	$51	$13,000	$8,500

Summary of Present Values and Equivalent Annualized Values for Estimated Monetized Compliance Costs, Benefits, and Net Benefits of the Control Strategies Applied Toward the Proposed Primary Alternative Standard Level of 9/35 µg/m3 (millions of 2017$, 2032-2051, discounted to 2022 using 3 and 7 percent discount rates)

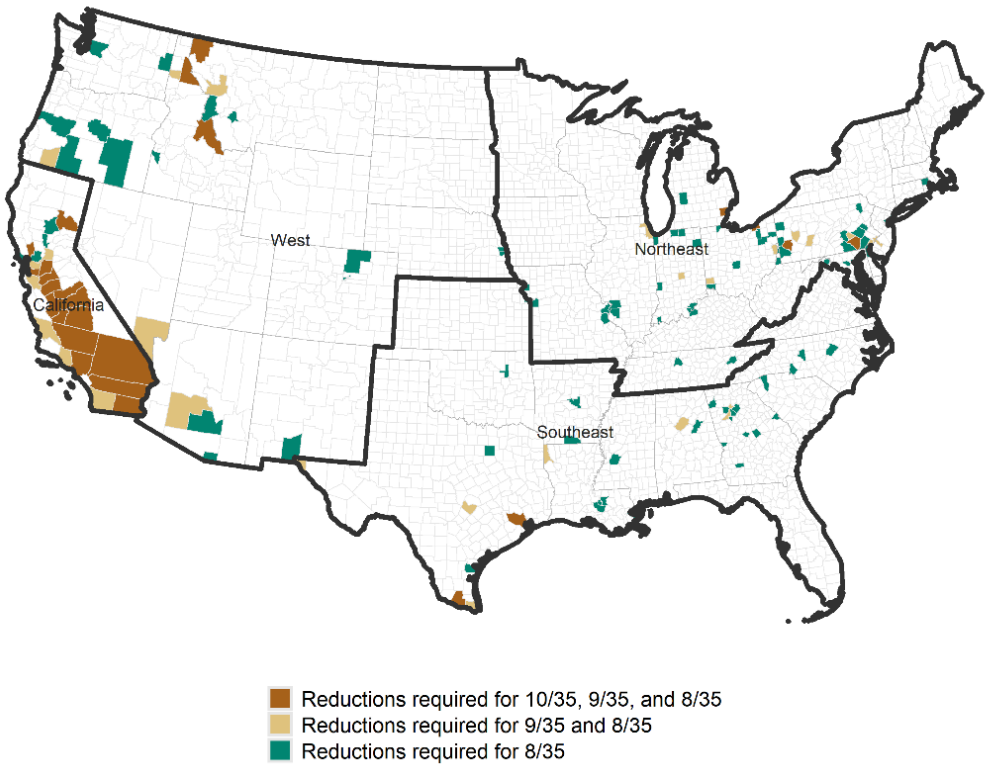
Costs			Benefits		Net Benefits	
2032-2051	3%	7%	3%	7%	3%	7%
Present Value	$490,000	$220,000	$4,500	$2,300	$490,000	$220,000
Equivalent Annualized Value	$33,000	$21,000	$300	$210	$33,000	$21,000

While both standards promise significant net health benefits, the estimated benefits for the 9 ug/m3 standard assume compliance with that standard, while the extent of emission reductions from as-yet unknown technologies needed to meet the standard are larger than those from known technologies. This suggests both that the 9 ug/m3 standard may not be achievable in many areas, and that the net benefits of the standard may be much smaller than those EPA has estimated.

Concerns About Potential Nonattainment

The RIA provides estimates of the number of counties that may be in nonattainment with the alternative standards in 2032, along with estimates of the

emission reductions needed in each county to achieve attainment in 2032. The map below summarizes EPA's estimates for potential nonattainment and emission reduction needs in 2032:



The mapped data indicate substantial and increasing nonattainment as the annual standard is lowered from 10 ug/m3 to 8 ug/m3. Both the 8 ug/m3 and 9 ug/m3 annual standards increase nonattainment in the industrialized eastern United States based upon EPA's 2028 CMAQ modeling. The ability of states to avoid or to cure nonattainment at these lower levels of the annual standard, as discussed above, is highly dependent on the future availability of unknown control technologies. Neither the Northeast nor Southeast regions would require these unknown future controls to meet the 10 ug/m3 annual standard.

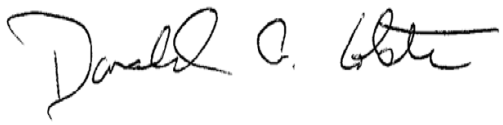
Conclusion

EPA’s proposal for reducing the annual standard for fine particulate matter to a level within the range of 9 to 10 ug/m3 is based upon the work of the Clean Air Science Advisory Committee and by EPA staff. Our preference for the 10 ug/m3 standard reflects the concerns expressed by CASAC members about the scientific and technical bases for a more substantial reduction of the current 12 ug/m3 standard. Our views

also are influenced by the potential adverse job impacts of creating new or expanded nonattainment areas under a standard of 8 or 9 ug/m3 while EPA's analysis shows that demonstration of attainment for these standards would unduly depend upon the development of currently unknown technologies.

Thank you for your consideration of these comments.

Sincerely,



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