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Environmental Protection Agency
Mail Code 6102T
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Washington, DC 20460

VIA EMAIL (a-and-r-Docket@epa.gov)

Re: Docket no. EPA-HQ-OAR-2007-035

The City of Alexandria thanks you for the opportunity to submit written comments on the US EPA's proposal, dated December 8, 2009, to revise the primary national ambient air quality standard (NAAQS) for sulfur dioxide (SO_2). As a densely populated suburb in the metropolitan Washington area, Alexandria is home to both a population of more than 130,000 and to a large (482 MW), sixty-plus-years-old coal-fired electrical generating plant. For multiple decades, long past the implementation of many of the health-based national air ambient quality standards for pollutants which it emitted, this major stationary source operated virtually unconstrained by any NAAQS limits. After years of urging by our local officials and citizens, state regulators finally relented to our request to require that the source's operators simulate this facility's air impacts, using standardized air quality modeling techniques (specifically, techniques embodied in the federally-promulgated Guideline on Air Quality Modeling,[1] i.e., "Guideline" techniques). The source operator's own refined ambient air quality modeling analysis showed that the

[1] The most recent version of the "Guideline" was issued in November, 2005.

facility's emissions, taken alone, violated NAAQS by astounding levels, for some pollutants by more than ten times.

More than half a decade passed since the disclosure that the source's emission rates exceeded NAAQS, at egregious, multiple levels, to when a permit was issued by state regulators that ordered emissions reductions, on the order of 75%, to assure the source's operation at levels that protected current NAAQS. During this arduous time, in intense and often difficult negotiations, Alexandria government and its citizens expended significant municipal resources, to affect what should have been automatically granted by the Clean Air Act, i.e., protection from air pollutant impacts from a discrete stationary source that violated health-based air quality standards.

Alexandria believes that our experience is likely not unique, in which a single major stationary source of SO_2 (or other criteria pollutants), operates in close proximity to homes and businesses, and exposes citizens chronically and frequently to impacts far in excess of the NAAQS. In its proposal for this short-term SO_2 NAAQS, US EPA discusses the existing regulatory means by which local areas of nonattainment might be remedied to a compliance status, i.e., through a State Implementation Plan (SIP), or through the ambient air quality modeling simulations and subsequent model-based limitations required by the New Source Review (NSR) program.

Alexandria's experience provides an on-the-ground and practical perspective on NAAQS implementation. Our experience demonstrates that neither the SIP nor NSR regulatory process can serve to achieve NAAQS compliance, either in a timely manner or at all, in these settings where single stationary sources produce their own non-attainment areas. Instead, we ask that US EPA propose a policy or regulation to remedy the significant gap in public health protection that arises now between the promulgation of health-based standards, like this short-term SO_2 NAAQS, and the implementation in the field by air regulators, for whom the goal of protection of public health should be pressing and incumbent.

Most Stringent of the Proposals should be Adopted

First, Alexandria expresses strong support for the promulgation of the most stringent of the proposed one-hour SO_2 standards, i.e., at 50 parts per billion. In the proposed rule, US EPA cites the Integrated Science Assessment conclusion that the full range of evidence supports a causal relationship between respiratory human health endpoints and short-term SO_2 exposures. US EPA also describes several studies in which the associations between respiratory symptoms in children and SO_2 ambient concentrations between 17 and 37 parts per billion were observed. Also, the ISA's evidence base includes studies showing that at five to 10-minute periods of exposure to 200 to 300 parts per billion of SO_2 concentration, a significant number of asthmatics experienced "moderate or greater decrements in lung function." Certainly, the Clean Air Act's requirement that air quality standards that are "requisite to protect the public health…" while also allowing for an "adequate margin of safety," should, in our view, lead US EPA to adopt the more stringent of the proposed one-hour standards.

The nature of the operational process of many add-on SO_2 control technologies allows for great short-term variation in SO_2 emissions. Review of at least one coal-fired electrical generating unit's emissions shows that short-term emission rates can vary substantially from hour to hour [see www.epa.gov/airmarkets]. Therefore, we believe that the more stringent of the proposed standards should be adopted, not only because the current health-based evidence does not conclusively support that the lower of the proposals guarantees a no-adverse-effect level, but also because adoption of the lower standard provides a greater level of assurance that even higher, shorter-term peaks in SO_2 emissions would be mitigated.

Additionally, Alexandria supports a selection of either a first-high or second-high statistical basis for the one-hour standard, i.e., versus the proposed 99- or 98-percentile statistical bases. The health-based evidence shows a causal relationship between adverse health effects and short-term peaks in SO_2. Therefore, selection of any statistical basis for the standard, more lenient than a first- or second-highest basis, grants allowance to

emitters of SO_2 of three or more occurrences per year of impacts in excess of levels at which health effects occur. This unduly releases source owner/operators from the responsibility of continuous compliance, while shifting the cost of potential health risks from exposure in excess at levels at which health-effects occur, to the public.

A New Regulatory Petition for Timely and Modeled NAAQS Compliance should be Proposed

In the proposed rule, US EPA states that the "CAA directs EPA and the states to begin taking steps to ensure that the new or revised NAAQS is met." US EPA also states that "there are sufficient guidance documents and regulations currently in place to implement the proposed revision to the NAAQS." US EPA then describes these already-existing regulatory pathways of the SIP and NSR programs, implying that these processes can serve to achieve compliance even in the discrete areas for which the new standard is violated by a single stationary source.

However, Alexandria believes that it is a false premise to point to the SIP and NSR programs as effective means of remedying NAAQS-contravening impacts to the public from existing large stationary sources. Alexandria's own experience illustrates the extreme difficulty and vast resources that must be committed when an existing major source is shown to operate at levels of emissions that, taken alone, show violations of health-based standards, using standardized modeling techniques. First, the NSR program, both major and minor, and its requisite ambient air quality standards compliance demonstration is triggered only when a physical modification at a source leads to annual emission *increases*. However, many large electrical generating units and other stationary sources undertake significant physical projects that alter their operating configurations (in many cases, to improve financial performance), and while these physical changes often increase plant output, annual emissions either decrease or do not change from the historical level of emissions, or baseline. Further, recent changes in the federal New Source Review program have granted operators of large stationary sources significant flexibility in determining what period of operations constitutes their baseline.

Consequently, many of the oldest, dirtiest sources of pollution are essentially perpetually grandfathered from the requirement to operate with the necessary emission controls are at levels to assure compliance with ambient air quality standards (and the commensurate protection of public health).

US EPA also cites, as a potential remedy for localized nonattainment, the SIP by which regulators identify areas that do not meet the new or revised NAAQS. Through this process, the new SO_2 NAAQS proposal suggests, new SO_2 monitors could be placed to identify areas of localized nonattainment caused by discrete stationary sources. Alexandria believes that sole reliance on any number of locally-cited monitors is misplaced, not only because the SIP process, and its categorical source control measures, is designed for assuring that *regional* levels of pollutants comply with ambient air quality standards, but because monitoring methods cannot fully and comprehensively identify all areas of non-compliance caused by a single source's maximum potential emissions, for all of the possible local meteorological conditions

To illustrate, through the SIP process, in an area for which conditions indicate potential violations of the new NAAQS attributable to a particular source, a) regulators might assign a monitor or monitors to the generalized area; b) those monitors would need to be correctly located at the discrete points where the combinations of emissions and meteorology produce impacts in excess of the NAAQS (ironically, requiring that the state regulators, at public expense, perform an air quality modeling analysis); c) then, after three years of monitoring, air regulators would then define a non-attainment area; and e) then, after an additional subsequent year, control measures commensurate with the NAAQS would be stipulated through the SIP. In total, a SIP remedy to a NAAQS contravention by a single source may, under the best timing scenario, take eight or more years.

Specifically, in our case, both regional, and more locally-sited monitoring failed to capture any indication of the frequency and scale of NAAQS exceedances by this large source on an area that included thousands of residents. Similarly, in other areas,

Alexandria believes that immediately upon promulgation of this new SO_2 standard there may be multiple and widespread localized areas of nonattainment caused by large, distinct stationary sources. We believe that reliance on the SIP-based monitoring method of NAAQS implementation practically guarantees that many thousands, and perhaps millions, of adults and children throughout the US will continue, for many years, to suffer the health effects of frequent and chronic exposures in excess of the short-term NAAQS. This may follow many years, possibly decades of exposure from the emissions of proximate single sources, at levels in excess of impacts at which health effects occur.

In contrast to monitoring, an ambient air quality analysis allows for the determination of the full spatial extent of NAAQS-contravening impacts by a source, for all operational and meteorological conditions. Therefore, to correct this regulatory gap in the public health protection, Alexandria asks US EPA to propose and implement along with the new SO_2 NAAQS, a streamlined procedure by which local air quality agencies can petition a single major source to demonstrate compliance with the new ambient air quality standard using standardized modeling techniques, as prescribed by the "Guideline." These results would then be used to determine an emissions control regime for the source that is NAAQS-protective.

US EPA has modeling tools that are readily available for this purpose, and no new tools would need to be developed. For pollutants like SO_2, for which contributions to ambient impacts are relatively easily attributable to particular sources, US EPA has invested significant resources in streamlining procedures and in prescribing guidelines, in order to make air quality modeling equitable and standardized in practice. [2] Consequently, an existing major stationary source should now readily be able to calculate how their

[2] For the AERMOD system, which is applicable to calculating the SO_2 impacts of stationary sources, US EPA has worked with the American Meteorological Society to develop a highly accurate air quality model that predicts impacts that, on average, are essentially equivalent to observed impacts [see "AERMOD: Latest Features and Evaluation Results," US EPA, June, 2003, at http://www.epa.gov/scram001/7thconf/aermod/aermod_mep.pdf, which states that the overall ratio of short-term predicted to observed concentrations ranges from 0.97 to 1.03, depending on building and stack configurations]. US EPA has also developed pre-processors for many of the previously labor-intensive steps that made past NAAQS demonstrations largely dependent on the skill and judgment of the modeler. For example, the terrain and meteorological input parameters for the AERMOD system are now prepared using prescribed steps and publicly-available databases. Model input data related to emissions and operations can be efficiently processed for a modeling simulation by the source owner/operator.

maximum potential emissions affect nearby ambient levels of pollutants, because the ambient air quality standards compliance demonstration is no longer the herculean task that it once was. In time and resources required, an air quality modeling simulation is now similar to the effort required in preparing a major source's Title V application.

Ironically, without a new NAAQS-implementation procedure, the oldest, often dirtiest and least-efficient sources continue to operate at a significant cost advantage, free of best-available (BACT) and lowest-achievable emission rate (LAER) controls and NAAQS-compliance constraints. Conversely, the newest, cleaner and more-efficient sources must employ modeling procedures and strict controls necessary to assure NAAQS compliance.

Alexandria also strongly supports the proposed implementation of the short-term monitoring network to capture 5-minute and short-term peaks of ambient SO_2 levels. In its proposal for this new SO_2 NAAQS, US EPA describes a program for air quality monitoring in locations of expected high peaks of short-term SO_2 concentrations, as part of a two-pronged monitoring approach for the new SO_2 NAAQS. While Alexandria commends US EPA in its proposal to cite monitors at locations of expected high impacts, including those adjacent to sources of high emissions, a position that demonstrates an interest in remedying impacts to the public health, our experience shows that local monitoring should only be used as a backstop, in order to assist in compliance verification, and only after air quality model-based limitations are developed and implemented by the large stationary sources that have the potential to contravene NAAQS protections.

To illustrate, in our particular case, after the disclosure of the source operator's analysis showing that emissions egregiously violated NAAQS, but preceding the point in time at which a permit was issued on the basis of air quality modeling, i.e., "Guideline" techniques, regulators proposed a monitoring system that presumably would protect against NAAQS contravention during the interim period, during which the source was still allowed to operate at daily levels that were far in excess of what a "Guideline" air quality analysis and permit regime would stipulate. Yet this monitoring method failed to

protect against NAAQS violations: subsequently a NAAQS violation was recorded because this plant was allowed to operate at levels that exceeded the limitations allowed by the "Guideline" approach.

Therefore, Alexandria believes that US EPA's funds and analytical resources would be effectively expended on also promulgating a modeling-based approach to identify and remedy situations where single, major stationary sources are producing localized SO_2 nonattainment areas. To emphasize, our experience shows that only through the application of air quality modeling techniques can emission limits be established for existing major sources, in a timely manner, that are NAAQS-protective for all areas affected by the source, that account for the source's maximum potential emissions and all local meteorological conditions.

Conclusion

Over many years, Alexandria's citizens and officials worked together with state regulators to finally achieve a remedy of a decades-long environmental scenario with serious health implications for thousands of residents, whereby a single source's emissions produced impacts that, taken alone, far exceeded health-based NAAQS. Consequently, since 2008, this single source's emissions have been reduced through a control regime to a fraction of their previous levels, now constrained to levels that assure protection of the current NAAQS. Instead, had our officials and citizens only relied on, and pursued, the regulatory processes that US EPA points to as the means for NAAQS implementation, it can be said with some certainty that our citizens would still be subject to emissions levels that chronically and frequently produce impacts far in excess of the health-based NAAQS.

Therefore, we hope that US EPA allows our experience to inform its development of a new policy for implementation of the new SO_2 NAAQS. Through our recommended policy, US EPA would correctly shift some of the responsibility for establishing emission limits for NAAQS protection to the very owners and operators of emission sources with

the potential to contravene these protections. An air quality modeling demonstration and plan for compliance should become the burden of emissions generators within a reasonable period of time upon the promulgation of the new SO_2 NAAQS. Therefore, along with this new standard, we ask that US EPA promulgate a regulation or policy that major sources demonstrate, within a reasonable period after the new standard's implementation, either that their own emissions do not cause or contribute to violations of the new NAAQS, using standardized, i.e., "Guideline" modeling techniques, or, to propose a plan by which they will implement control measures to assure that their emissions will not contravene the new NAAQS.

Additionally, Alexandria recommends that US EPA adopt the most stringent of the one hour SO_2 NAAQS and statistical bases.

Again, Alexandria thanks you for this opportunity to comment on the new SO_2 NAAQS proposal.

Sincerely,

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