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September 14, 2009

Docket No. EPA-HQ-OAR-2006-0922
U.S. Environmental Protection Agency
Mailcode 6102T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Sir or Madam:

The Interstate Natural Gas Association of America (INGAA), a trade association of the interstate natural gas pipeline industry, submits these comments on the U.S. EPA's proposed rule, National Ambient Air Quality Standards for Nitrogen Dioxide (NO_2 NAAQS Proposal). The proposal was published in the Federal Register on July 15, 2009, at 74 FR 34404 – 34466. INGAA members provide a vital service within the U.S. energy infrastructure by ensuring the safe, economical transport of natural gas from producing areas to customers throughout the nation. INGAA is concerned with this proposed rule because there are significant questions on whether short-term NO_2 health effects warrant a standard within the range proposed by EPA, and the proposed 1-hour NO_2 NAAQS would impose significant additional burden on gas transmission operations, adding significant costs to INGAA members and natural gas consumers.

INGAA member companies transport more than 95 percent of the nation's natural gas, through some 220,000 miles of interstate natural gas pipelines. INGAA member companies operate over 6,000 stationary natural gas-fired spark ignition reciprocating internal combustion (IC) engines and 1,000 combustion turbines, which are installed at compressor stations along the pipelines to transport natural gas to residential, commercial, industrial and electric utility customers. INGAA member companies have a history of working with the U.S. EPA Office of Air Quality Planning and Standards (OAQPS) on standards that potentially affect the IC engines and combustion turbines used in natural gas transmission. For example, INGAA member companies provided comments and background material to support development of revisions to the IC engine NESHAP (40 CFR 63, Subpart ZZZZ), new spark ignition reciprocating IC engine NSPS (40 CFR Part 60, Subpart JJJJ), and new combustion turbine NSPS (40 CFR Part 60, Subpart KKKK). In addition, representatives from INGAA member companies served on the Federal Advisory Committee, known as the Coordinating Committee, established for the Industrial Combustion Coordinated Rulemaking (ICCR) for the development of the combustion MACT standards. INGAA members served on the Combustion Turbine MACT Work Group, and also

served as Chair of the Reciprocating Internal Combustion Engine Work Group under ICCR, and as a member of the Boilers/Process Heaters Work Group. INGAA also worked with EPA on background information, identification of NOx control performance, and a model rule associated with the April 2004 NOx SIP Call Phase II Rule, which included NOx budgets associated with large IC engines used in gas transmission.

In participating in and supporting the development of federal standards, INGAA and its members have provided data and input integral to the technical foundation of these important regulations. With the potential for continued growth in natural gas consumption as an integral part of the U.S. strategy to address greenhouse gas emissions and reduce dependence on foreign oil, the natural gas transmission industry will continue to play an important role in ensuring a reliable supply of natural gas and the associated air quality benefits from natural gas use.

INGAA and its members continue to work with state and regional agencies regarding NOx control rules (e.g., NOx RACT) needed to address State Implementation Plan (SIP) requirements for the 8-hour ozone and fine particulate ($PM_{2.5}$) standards. Through these efforts, INGAA members have implemented emission controls in recent years. In addition, INGAA members have played an integral role in the development and commercialization of retrofit NOx controls for gas transmission compressor drivers through the support of research and development programs and technology demonstration projects. These actions show a commitment to environmental stewardship by this industry, while ensuring the integrity and reliability of the vital natural gas transmission infrastructure. However, INGAA members do not support regulatory requirements that lack reasonable certainty of environmental benefit – especially when there is a significant risk of high costs and additional negative consequences. As discussed in the comments below, due to uncertainty regarding short-term NO_2 health effects and the potential for significant implementation issues, INGAA does not believe that there is currently a compelling basis for a 1-hour NO_2 NAAQS within the range specified by EPA.

INGAA is concerned that the NO_2 NAAQS Proposal could result in onerous regulatory requirements for NOx sources throughout the U.S., without commensurate societal benefit or compelling evidence that the proposed 1-hour standard is necessary to protect public health and welfare. In addition, NO_2 will continue to decrease as NOx control programs are implemented to address nonattainment with the ozone and $PM_{2.5}$ NAAQS. Thus, INGAA favors a more measured approach until the current programs have been more fully implemented, the benefits of these programs are realized and understood, and NO_2 health effect studies provide compelling evidence that warrants a regulatory response.

More detailed INGAA comments follow.

1. <u>Ambient NO_2 Levels Have Declined and That Trend Will Continue</u>:

Air quality trends indicate that ambient NO_2 levels have fallen significantly over the last three decades and there has not been a violation of the current NO_2 NAAQS since 1991. As EPA indicated in its Integrated Science Assessment, monitoring data indicate that annual average ambient NO_2 levels decreased 41% between 1980 and 2006. Additional emissions controls

required for implementation of the 8-hour ozone NAAQS and $PM_{2.5}$ NAAQS will promote a continued downward trend in ambient NO_2. As discussed in comments below, INGAA does not believe that EPA has properly weighed the uncertainty in short-term NO_2 health effects or characterized implementation impacts that the NO_2 NAAQS Proposal could cause, and the complexity and burden for this rule would be exacerbated by managing three NAAQS programs (i.e., the ozone, $PM_{2.5}$ and NO_2 NAAQS) pursuing NO_2 reductions. Since there is considerable uncertainty regarding short-term NO_2 health effects, EPA should wait for more compelling evidence before instituting a new 1-hour NO_2 NAAQS, while being assured that other programs will result in significant NO_2 reductions over the next decade.

2. Current Best Science Does Not Support a 1-Hour Standard Within the Range Proposed by EPA:

INGAA questions whether the current best science adequately justifies the proposed 1-hour NO_2 NAAQS. Comments, letters, and public hearing testimony are already available in the docket from other stakeholders whose operations would be affected by the proposed rule. These comments raise serious questions about the current best science related to short-term NO_2 health effects, consensus views of publicly accessible peer-reviewed studies, and inconsistencies in EPA's record regarding the interpretation of health effect studies. In addition, since NO_2 is a direct emission with on-site impacts for stationary source facilities, there are relevant occupational safety standards that operators must address. The legacy of these standards indicates that the levels are more than adequate to ensure the safety of our employees, yet the proposed 1-hour NAAQS presumes health effects at much lower concentrations. While NAAQS standards are typically more stringent than occupational standards, the relative difference for the proposed NO_2 NAAQS is more stringent than other NAAQS. INGAA recommends that EPA reconsider and better substantiate its conclusions regarding health effects at 1-hour average NO_2 concentrations in the range of 80 to 100 ppbv, consider the relative level of related health- and safety-based standards that provide real-world examples for worker safety, and closely review and respond to alternative conclusions from studies completed by other stakeholders.

For example, EPA should consider conclusions from a more thorough meta-analysis discussed by Gradient Corporation (Gradient) on behalf of the American Petroleum Institute at the Public Hearings (e.g., see August 6 meeting transcript, Docket Document Number OAR-2006-0922-0288) and issues regarding peer review and consistency in conclusions raised by the National Association of Manufacturers in a June 1, 2009 letter to EPA (Docket Document No. OAR-2006-0922-0292). As an example, the Gradient analysis concluded that a short-term standard is not warranted or should be 600 ppbv or higher. These and other comments and public hearing testimony raise serious questions regarding: NO_2 short-term health effects; the last-minute addition of studies that have not been adequately peer-reviewed; unexplained inconsistencies in EPA interpretation of health-effect studies compared to previous EPA findings for the same studies; and, EPA interpretation of cited studies that are not consistent with the conclusions of study authors. These are important issues that must be addressed by EPA before a new 1-hour standard is adopted in the range discussed in the proposed rule.

INGAA recommends that EPA retain the current annual average standard for NO_2 and defer a 1-hour standard at this time due to questions and uncertainties regarding short-term health effects,

especially because a clear indication of short-term effects is unfounded, or at a minimum, in question at this time. This is apparent based on proposed rule support documents developed by EPA. In the Risk and Exposure Assessment, EPA acknowledges uncertainty regarding short-term health effects. For example, on Page 263 EPA indicates the following regarding causality for emergency room visits, which are a primary basis for EPA's justification of a short-term standard:

> "There is uncertainty about whether the association between NO2 and ED [Emergency Department] visits actually reflects a causal relationship. Our judgment, drawing on the conclusions in the ISA [Integrated Science Assessment] and as discussed in more detail in chapter 4, is that there is, at a minimum, a likely causal relationship with either short-term NO2 itself or with NO2 serving as an indicator for itself and other components of ambient air associated with combustion processes."

This is an important acknowledgement that raises serious questions about the basis for a short-term NO_2 NAAQS, indicating that: (1) there is uncertainty regarding a causal relationship; and (2) even if a relationship exists, it may be due to a different component of combustion emissions and *not* NO_2. In fact, Department of Energy (DOE) comments to EPA suggest that key epidemiologic studies used by EPA are not adequate to infer a likely causal relationship (see Docket Document No. OAR-2006-0922-0144). DOE suggests that NO_2 could be acting as a proxy for another pollutant such as diesel particulate emissions. With such uncertainty, INGAA believes it is premature to adopt a 1-hour standard at this time.

In addition, although established based on different regulatory criteria, occupational health and safety standards for short-term NO_2 exposure reflect different levels than the proposed 1-hour NO_2 NAAQS. The legacy of these measures to ensure worker safety indicates that established standards are more than sufficient to protect worker health. INGAA members address safety concerns of company personnel both in regard to regulatory obligations and corporate goals for healthy, productive employees. The related health-based standards (e.g., Short-term Exposure Level (STEL) or ceiling Permissible Exposure Level (PEL) from OSHA or NIOSH, etc.) are higher than the proposed NAAQS. Experience indicates that facility personnel are not negatively impacted and these standards as well as the current annual NO_2 NAAQS are adequate protective measures.

When comparing the relative margin of OSHA or NIOSH standards to the NAAQS for other gases, the proposed NO_2 NAAQS is more stringent. For example, the OSHA NO_2 PEL (ceiling) is 5 ppmv (i.e., 5000 ppbv) and the NIOSH STEL is 1 ppmv (1000 ppbv). These levels are one to two orders of magnitude higher than ranges being considered by EPA for the 1-hour NO_2 NAAQS. By comparison, the CO NAAQS 1-hour average standard is 35 ppmv, compared to a NIOSH STEL of 200 ppmv, a factor of 5.7. This appears to indicate a more conservative approach for the proposed NO_2 NAAQS.

3. <u>Lacking Clear and Compelling Health Effects Conclusions, EPA Should Not Propose Such a Significant Change to the NO_2 NAAQS</u>:

According to EPA analysis associated with the proposal, there is significant uncertainty regarding short-term NO_2 health effects. In addition, the impact analysis (see Comment 5)

indicates that the range of potential benefits include negative consequences (i.e., a societal disbenefit). Further, EPA response to clearer scientific evidence of the need for a short-term standard can occur on a timely basis because the NAAQS review process requires a 5-year review to ensure that NAAQS are regularly updated based on the best available science. The timing to implement a new NO_2 standard is also complicated by EPA's plan to implement a new near-roadway monitoring network. Independent of actions related to the NO_2 NAAQS, NO_2 reductions will surely continue as ozone and $PM_{2.5}$ NAAQS are implemented.

This array of competing issues should be considered when determining the need for a new standard, and these related issues are relevant in light of the uncertainty regarding short-term health effects, the lack of adequate monitoring sites, and Administrator discretion when deciding whether to retain the existing standard or propose a new NAAQS. Thus, INGAA recommends that EPA retain the current annual NO_2 NAAQS and defer promulgating a new short-term NAAQS or revising the annual NAAQS. A revision to the current NO_2 NAAQS should only occur when and if more compelling peer-reviewed scientific information is available and accepted by a broader consensus.

The proposed 1-hour standard is significantly more stringent than the existing annual standard, and this proposed revision may result in more significant implications than any NAAQS revision in EPA's history (see Comment 4). With an annual standard of 53 ppbv, EPA's Risk and Exposure Assessment indicates that this is expected to protect against maximum 1-hour NO_2 concentrations of about 150 ppbv to 400 ppbv, depending upon the characteristic ratio of short-term to annual average concentrations for a particular location. EPA has solicited comment on a NAAQS within the range of 80 to 100 ppbv, and has also requested comment on a 1-hour standard as low as 50 ppbv based on area-wide rather than roadside monitoring. Thus, especially at the low end of this range, the stringency of the standard is dramatically impacted relative to the current NAAQS. In addition, as discussed in Comment 4, there would be significant new implications associated with nonattainment new source review (NSR), prevention of significant (PSD), and Title V renewal permitting. Dispersion modeling typically results in a ten to twelve-fold difference between 1-hour and annual maximum impacts. Thus, with the proposed 1-hour standard similar in magnitude to the current annual standard, there would be permitting implications that could impose significant economic burden and societal impacts that EPA has not considered.

Lacking a scientific consensus on short-term NO_2 health effects and considering the uncertainty acknowledged in the Risk and Exposure Assessment, INGAA believes it is premature for EPA to adopt a new short-term standard. In fact, the range of short-term protection (150 to 400 ppbv) afforded by the current annual standard provides a level of protection that INGAA believes is more than adequate based on the current science. Due to short-term health effects uncertainty, INGAA recommends that the Administrator conclude that that an NO_2 NAAQS revision is not warranted at this time. In the interim until the next NO_2 NAAQS review, there will be an opportunity to supplement health effects data and allow a more thorough peer-review process. In addition, EPA could pursue establishing the necessary monitoring network during this time. Armed with more complete health effects and monitoring data, a more informed decision regarding the need for a short-term standard would be possible during the next review cycle.

4. EPA has Not Considered Implications for Stationary Sources and Potentially Significant Negative Consequences:

EPA focuses on roadside monitoring and near-road health concerns, but the proposed NAAQS would likely have significant implications for remote stationary sources that operate combustion units. Natural gas transmission operations include reciprocating IC engines and combustion turbines that drive natural gas compressors. As discussed in Comment 5, EPA analysis considers control costs for non-EGU sources similar to the ozone NAAQS analysis. However, those cost estimates significantly under-estimate potential impacts to the gas transmission industry from a new 1-hour NO_2 NAAQS.

Based on current rules and next generation NOx control rules to meet the revised ozone and $PM_{2.5}$ standards, non-EGU combustion sources, including some gas transmission equipment, will be controlled in the coming years. As with recent actions such as the NOx SIP Call Phase II Rule and state NOx RACT rules, INGAA members will provide input to states and EPA to promote rules that provide the most meaningful benefit, such as focusing on larger and higher utilization units. Since the natural gas transmission system is designed to meet high demand days (e.g., peak heating season demand for natural gas), some equipment is underutilized throughout the year. Control of smaller, low-use units would not provide meaningful environmental benefit and would incur significant costs and high cost effectiveness values. However, permitting requirements associated with a new 1-hour standard could impose controls and significant burden for such units.

PSD/NSR permitting and Title V permit renewal can trigger dispersion modeling requirements. In many cases, facilities with combustion devices and modeled impacts less than the annual NO_2 NAAQS may exhibit 1-hour NO_2 impacts in excess of EPA's proposed standard (i.e., 80 to 100 ppbv), especially when the background level is considered. The EPA Risk Exposure and Assessment indicates average daily maximum hourly NO_2 concentrations were approximately 30 ppbv for 2003 – 2005. The background for modeling could become higher if a new roadside monitoring network is used to establish new background levels. The proposed rule does not address how "near-road" monitors would be considered in developing background NO_2 concentrations. If states develop new background NO_2 concentrations by including these data, it would surely increase background concentrations. This would introduce a greater challenge for individual stationary sources to demonstrate compliance with the NO_2 NAAQS. EPA should address this issue, because it would be inappropriate to include ambient "near-road" NO_2 in background calculations for sources where the existing "area-wide" monitoring network is more indicative of background. Since the proposed rule does not discuss this issue, the potential impact is not clear. However, a high bias to background levels could exacerbate modeling problems for stationary sources. In addition, the modeling exercise for a short-term standard would become more complicated to properly address plume NO and NO_2 chemistry, unit-specific NO_2 to NOx ratios that consider control technology and temperature effects, and local meteorology and ozone background.

The 1-hour standard could trigger draconian measures in response to modeling associated with smaller and low-use units. This would affect numerous stationary sources in the U.S. and the

cost implications could be enormous – without commensurate environmental benefit. For example, dispersion modeling to meet a 1-hour NO_2 NAAQS could require emission levels beyond the capability of current control technologies, thus introducing regulatory quandaries that are difficult and/or extremely expensive to overcome. In some cases, regulatory criteria could imply shutdown of facility equipment, which would conflict with Federal Energy Regulatory Commission (FERC) requirements for natural gas delivery and have impacts on the domestic energy infrastructure. These are not improbable scenarios based on a preliminary review of potential implications from combustion source modeling.

The abbreviated comment period has not allowed INGAA the opportunity to examine this issue in detail, but example modeling of a single uncontrolled engine, or a larger state of the art engine with very low NOx emissions, indicates that modeled 1-hour impacts may exceed the NO_2 levels proposed. In some cases, there may not be viable alternatives to reduce emissions; thus, a 1-hour NO_2 NAAQS could cripple industrial sectors and the U.S. energy infrastructure. This significant impact should be characterized by EPA and included in the Regulatory Impact Analysis (RIA). A cursory review of RIA costs indicates that a significant portion of the projected economy-wide costs could be borne solely by the gas transmission industry, thus indicating that EPA has significantly under-estimated potential cost impacts for the gas transmission sector as well as overall rule costs.

The resulting effects could ripple through the economy, and the economic burden could have substantial negative impact on the health and well-being of our population. As noted throughout these comments, considering the uncertainty regarding short-term NO_2 health effects, serious questions regarding the EPA analysis, and potentially significant implications of a new 1-hour NO_2 NAAQS on affected stakeholders and the economy, EPA should be compelled to retain the current standard and defer a decision on a new short-term standard until the science is more clearly defined. As discussed in the following comment, the "missing costs" or the probable gross under-estimate of RIA cost impacts have implications for the net societal benefit of the proposed standard.

5. Analysis Indicates Significant Uncertainty in Societal Benefits from the Proposed 1-Hour NAAQS:

INGAA understands that for NAAQS review, EPA's decision must be based on a NAAQS level that is protective of human health and welfare without consideration of costs. However, the courts have concluded that the Administrator has discretion in determining what constitutes a protective standard. In addition, a Supreme Court opinion quoted in the preamble of the 2007 proposed ozone NAAQS revision indicates that EPA is not required to eliminate every health risk at any economic cost. EPA analysis in the NO_2 NAAQS RIA indicates considerable uncertainty associated with the societal benefit (or lack thereof) from a lower standard. Due to the uncertainty regarding health effects and the lack of a clear, compelling basis to support a short-term standard, INGAA believes that marginal or negative societal benefits are a contributing factor that should be considered when the Administrator establishes the standard.

The potential economic burden on U.S. industry and consumers from a new 1-hour NO_2 NAAQS would be substantial, and INGAA review of the RIA indicates that EPA has failed to consider significant costs that would be borne by many stationary sources with combustors. The RIA discusses multiple scenarios based on alternative levels of the standard, standard levels based on roadway versus an area-wide monitoring network, alternative discount rates, and alternative analysis methods. In general, the scenarios analyzed indicate a range of costs and benefits that result in a net benefit range that encompasses a negative (i.e., disbenefit) to positive net benefit. For example, the net benefit presented in RIA Table ES.5 for a 50 ppbv area-wide based standard and 7% discount rate indicates a net benefit range from -$150 million to +$200 million (in 2006$). The most extreme examples from the RIA scenarios considered result in a net benefit as low as -$1,500 million to as high as +$5,700 million. However, when considering additional cost (e.g., see example below), INGAA believes that the cost estimates are grossly underestimated – thus resulting in larger *negative* net benefits.

For non-EGU stationary sources, such as INGAA member facilities, EPA costs consider NOx controls that supplement the recent ozone NAAQS analysis and base control costs on EPA's AirControlNET model. INGAA review of AirControlNET indicates that control costs are under-estimated for many technology options applicable to gas transmission sources. INGAA is currently reviewing AirControlNET assumptions regarding control technology performance and cost, and INGAA expects to communicate the results of this review to the appropriate EPA staff, with the hope of improving the technical veracity of that modeling tool. It is apparent that some cost assumptions under-estimate the costs based on INGAA members experience with retrofit application of NOx controls to existing equipment. In addition, EPA has failed to consider additional significant cost impacts associated with permitting requirements for stationary sources as discussed in Comment 4. Considering more reasonable costs would result in a net negative benefit that is significantly larger than presented in the RIA.

For example, for the 50 ppbv area-wide analysis noted above with a net benefit range of -$150 million to +$200 million, the projected annualized cost is $400 million. Table 6.4 of the RIA indicates non-EGU controls will cost $2,200 per ton and Table 6.8 indicates an annual cost of $0.3 million (i.e., $300,000, in 2006$) for the pipeline transportation sector. INGAA believes that these costs are inordinately low. Annualized control costs for a single facility or even for a single engine would be in this range, as demonstrated by the recent installation of NOx controls by an INGAA member.

To address a state requirement, an INGAA member was recently required to reduce NOx from existing IC engines for several facilities. At one facility, low emissions combustion (LEC) NOx control was installed on three larger engines (3,400 hp each) with a total capital investment (TCI) cost of over $3.4 million (TCI of approximately $340 per hp). Using EPA's RIA assumption of 7% interest and procedures from the EPA Control Cost Manual, the total annualized cost (including operating costs) for this facility was $874,000 – nearly triple EPA's RIA estimate for the entire pipeline industry. A second facility with eleven smaller engines (911 hp each) indicated a TCI cost for LEC control of $8.8 million (TCI of approximately $880 per hp) and total annualized cost of $2.5 million or $228,000 for each engine. The higher relative cost for control of

smaller engines has also been documented by other INGAA members because more significant upgrades are often required for the smaller IC engines used in gas transmission.

Both of these examples indicate that EPA's cost estimate for the pipeline transportation sector is grossly underestimated. For example, the smaller engine types represent a significant portion of the natural gas transmission infrastructure (i.e., 25 to 30% by engine count) and these engines often have lower utilization than larger engines. However, as discussed in Comment 4, the proposed short-term standard could trigger facility modeling that result in control requirements for these smaller engines. The control costs are higher on a relative basis for these engines. If costs are projected based on the example above, a new short-term NO_2 NAAQS that results in control of a significant portion of these smaller engines would incur costs from this natural gas transmission sector engine category that rival the RIA economy-wide cost projections.

If dispersion modeling requirements (see Comment 4) result in draconian measures, costs for the gas transmission industry could be two to three orders of magnitude or more higher than the RIA projection for this sector, and this sector alone could exceed or comprise a significant portion of the economy-wide total costs projected by EPA. These significantly higher costs would have major implications on the perceived net benefit, and likely result in very few RIA scenarios that demonstrate a net positive benefit as a probable outcome. Clearly, EPA has not fully considered potential cost implications and operational or technical constraints associated with a new 1-hour NO_2 NAAQS, resulting in a false sense of security regarding potential outcomes and societal benefits.

The RIA analysis should be revised to consider significant potential implications for stationary combustion sources, and the revised RIA should be made available for review. Since there is considerable uncertainty regarding the health effects associated with short-term NO_2 exposure, significant negative net benefits resulting from a 1-hour NO_2 NAAQS are an important factor to be considered when applying reasoned discretion for the Administrator's decision.

INGAA appreciates the opportunity to comment on this rulemaking. If you have any questions about these comments or the natural gas transmission industry, please feel free to contact me at 202-216-5935 or lbeal@ingaa.org.

Sincerely,

Lisa S Beal

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Interstate Natural Gas Association of America

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