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Dynamic Delivery –
America's Evolving Oil and Natural Gas Transportation Infrastructure
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Topic Paper #3-1

CLEAN AIR ACT

Prepared for the
Permitting, Siting, and Community Engagement for Infrastructure Development Task Group

On December 12, 2019 the National Petroleum Council (NPC) in approving its report, *Dynamic Delivery – America's Evolving Oil and Natural Gas Transportation Infrastructure*, also approved the making available of certain materials used in the study process, including detailed, specific subject matter papers prepared or used by the study's Permitting, Siting, and Community Engagement for Infrastructure Development Task Group. These Topic Papers were working documents that were part of the analyses that led to development of the summary results presented in the report's Executive Summary and Chapters.

These Topic Papers represent the views and conclusions of the authors. The National Petroleum Council has not endorsed or approved the statements and conclusions contained in these documents, but approved the publication of these materials as part of the study process.

The NPC believes that these papers will be of interest to the readers of the report and will help them better understand the results. These materials are being made available in the interest of transparency.

The attached paper is one of 26 such working documents used in the study analyses. Appendix C of the final NPC report provides a complete list of the 26 Topic Papers. The full papers can be viewed and downloaded from the report section of the NPC website (www.npc.org).

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Topic Paper

(Prepared for the National Petroleum Council Study on Oil and Natural Gas Transportation Infrastructure)

3-1	**Clean Air Act**
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Reviewers	
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SUMMARY

This paper overviews several aspects of the Clean Air Act as they pertain to modes of infrastructure.

1. National Ambient Air Quality Standards

The foundation of the CAA is the National Ambient Air Quality Standards program. Congress directed EPA first to identify specific pollutants meriting regulation, and second, to identify what ambient concentration of each pollutant will protect "public health" and "welfare," with an "adequate margin of safety.[1] These ambient concentrations are called National Ambient Air Quality Standards or "NAAQS." EPA has established NAAQS for six pollutants: sulfur dioxide (SO2), particulate matter (PM), nitrogen oxide (NOx), carbon monoxide (CO), ozone (O3) and lead (Pb).[2] Accordingly, the lead federal agency may rely upon and incorporate EPA's NAAQS analyses directly into the lead federal agency's NEPA documents.

To set the NAAQS, EPA must evaluate a variety of impacts. The primary NAAQS focuses on the human health effects of the pollutant, while the secondary NAAQS protects the public welfare, which includes "effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being."[3] EPA's analysis must include all available scientific data, which is compiled, peer-reviewed, and provided for public review and comment.[4] These NAAQS are then updated every five years.[5]

[1] 42 U.S.C. § 7408(a)-(b)
[2] 40 C.F.R. Part 50
[3] 42 U.S.C. §§ 7602(h), 7408(a)(2), 7409(b)(2)
[4] 42 U.S.C. §§ 7408(a), 7409(a)(B)
[5] 42 U.S.C. § 7409(d)(1)

Tropospheric, or ground level ozone, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC). This happens when pollutants emitted by cars, power plants, refineries, and other sources chemically react in the presence of sunlight. In order to continuously assess ozone air pollution levels, state and local environmental agencies operate monitors at various locations and subsequently submit the data to the EPA. At present, there are approximately 1,400 monitors across the U.S. reporting hourly ozone averages during the times of the year when local ozone pollution can be important. Much of this monitoring is focused on urban areas where precursor emissions[6] tend to be largest, as well as locations directly downwind of these areas, but there are also over 100 sites in rural areas where high levels of ozone can also be measured.

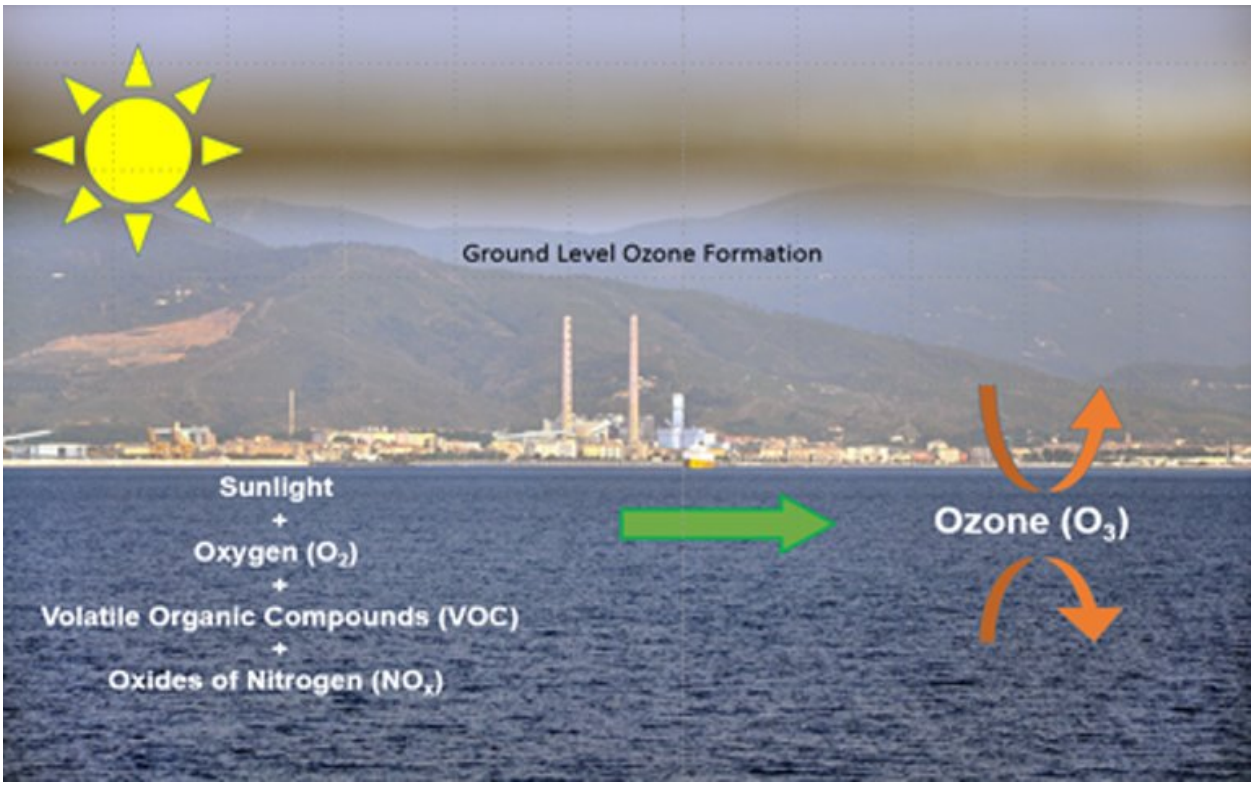

Figure 1. Ground Level Ozone Formation.

[6] Ozone precursors: Chemical compounds, such as carbon monoxide, methane, non-methane hydrocarbons, and nitrogen oxides, which in the presence of solar radiation react with other... chemical compounds to form ozone, mainly in the troposphere.

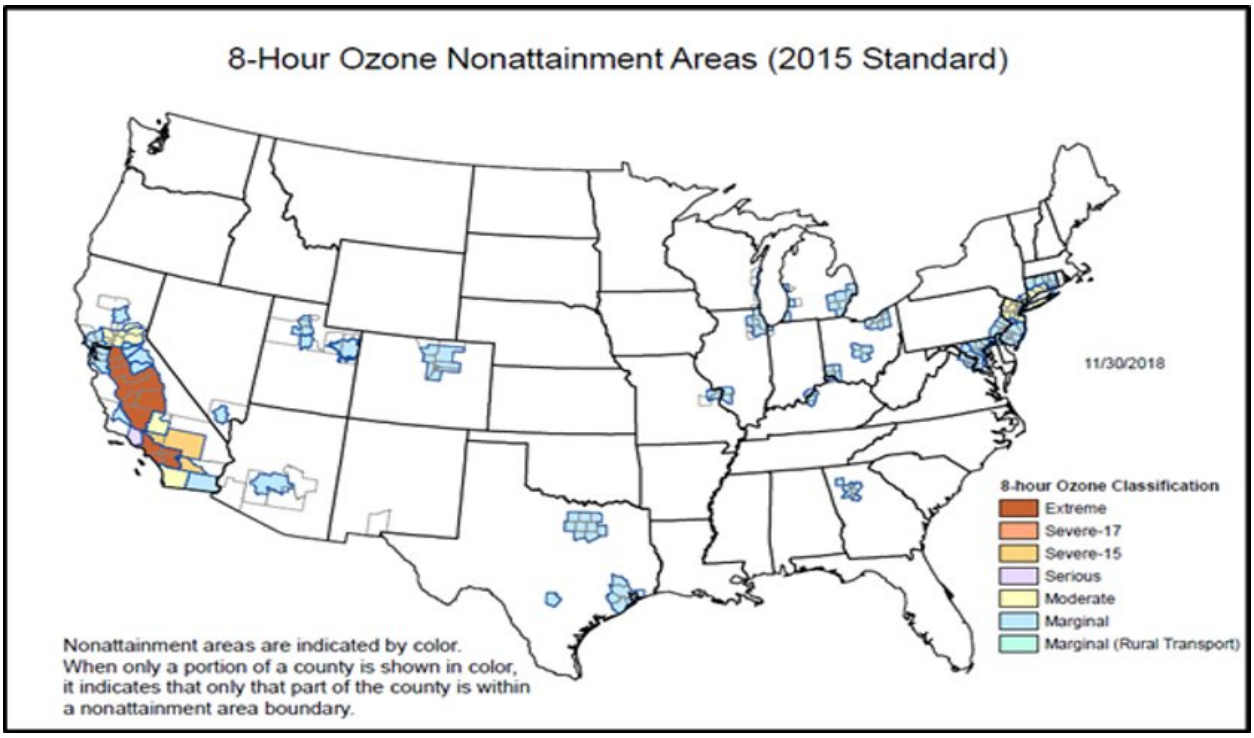

Figure 2. Ozone Non-Attainment.

2. State Implementation Plans

The Clean Air Act is a federalist statute: Congress delegated to EPA the authority to establish the NAAQS, and to each state the authority to determine how and when to attain the NAAQS (within the timeframes set forth in the Act). Establishing a NAAQS is only the first step in the CAA regulatory process; the NAAQS represents the state-wide air quality target, it is not an enforceable limit that applies to individual units/operators/facilities. Therefore, each state must determine how to implement this standard within its borders.

To begin the implementation process, EPA and the state's first assess the existing air quality within each air quality control region (AQCR); any area that is in compliance with a specific NAAQS is identified as an "attainment" area for that pollutant. Areas that are not achieving the NAAQS are identified as "nonattainment" for that pollutant.[7] Each state must then develop a comprehensive set of regulations comprising the State Implementation Plan, or "SIP". The SIP is designed to ensure that:

1. Areas already in attainment for a particular NAAQS will maintain that attainment status, and
2. Designated nonattainment areas will be subject to stringent control measures designed to return those areas to attainment (maintenance) status within the deadlines established by the CAA.

[7] 42 U.S.C. § 7407(d)(1)(A).

These state programs are wide-ranging, covering emissions sources of all kinds, and imposing numerous requirements. The CAA grants each state discretion to decide which sources to regulate and to what degree, based on its particular sources of pollution and economic considerations. With the exception of certain minimum federal standards, the Act grants each state individual discretion to decide what controls to require on which facilities. Each state's SIP must be approved by the EPA. If EPA concludes that the SIP will not attain or maintain the NAAQS within the allowed time, it must order the State to revise the SIP. EPA must step in and develop its own Federal Implementation Plan ("FIP") that will ensure compliance with the NAAQS for any state failing to attain the standards in a timely manner.

The NAAQS program entails a comprehensive, two-phased impacts review. The first phase (the establishment of the NAAQS) identifies the appropriate ambient level of individual pollutants to ensure that air emissions do not create a significant impact to health or welfare—which includes the "human environment" with which NEPA is concerned. The second phase (SIP development and EPA approval) ensures that compliance with the SIP will be sufficient to attain and maintain the NAAQS. By definition, compliance with the SIP ensures that a facility's emissions will not create a significant impact within the AQCR—and ensuring that a project will comply with existing EPA-approved SIP requirements provides the requisite "hard look" at potential air quality impacts that NEPA requires.

3. New Source Review

EPA's New Source Review ("NSR") program provides another layer of protection and federal review prior to the construction of certain significant emissions sources, or modifications to existing sources. An NSR review is designed to ensure that proposed projects install emissions control technology and will not have significant impacts on air quality. NSR extends the federalism set forth in the NAAQS and SIP programs discussed above: while Congress entrusted the states with regulation of smaller emissions sources, it concluded that larger emissions sources merited direct federal oversight given their more significant environmental impacts and the need for consistent national permitting standards for such sources. The NSR program is made up of two components: Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR). Emissions reductions requirements are built into both NSR permitting regimes.

a. Prevention of Significant Deterioration (PSD) Program

The PSD program applies to areas that are in attainment with the NAAQS for the pollutant in question; Projects that trigger NSR permitting are required to install control technology designed to mitigate the impacts of the new emissions. Projects in an attainment area that trigger PSD requirements must install the *"best available control technology" ("BACT").* A BACT analysis requires an intensive, case-by-case review of all available and achievable technology, including the selection of the most stringent emissions control option, unless technological, cost, or other concerns render it infeasible in the specific usage.

As sources are constructed within an area, they consume increment—i.e., the additional pollution from those sources increases the ambient concentration of particular pollutants in the atmosphere. Therefore, each new source's increment analysis necessarily considers the cumulative impact of

all construction up until that date. Once the increment is completely consumed—or if the construction of a new source would cause the area to exceed the NAAQS and become a nonattainment area for that pollutant—no new PSD permits may be issued for that pollutant. For NEPA purposes, this functions as a "cap" on air quality impacts that prevents cumulative impacts of multiple projects from degrading air quality below the level that EPA has determined to protect health and the environment (i.e. the NAAQS). Therefore, in order for a source to obtain a PSD permit, it must conduct detailed modeling to demonstrate that it will not cause or contribute to a violation of the NAAQS or consume too much increment.

b. Nonattainment New Source Review (NNSR) Program

The NNSR permitting program applies to designated nonattainment areas is somewhat different from its PSD (attainment) counterpart. While projects in an attainment area may consider the cost of control technology in its BACT analysis, a project triggering an NNSR review must achieve the *"lowest achievable emissions rate" ("LAER")* irrespective of cost. As these areas are not attaining the NAAQS, no additional "increment" of pollution is allowed. Instead, the NSR program requires any new source constructed in a nonattainment area to offset its emissions with an equal or greater reduction of emissions from existing sources within the same AQCR**.** In sum, the NSR program complements the NAAQS/SIP program, which requires EPA and the states to evaluate and mitigate relevant environmental impacts. The NAAQS represent a qualitative determination of what level of each pollutant is "safe," without considering cost or achievability of the measures necessary to get there. The SIP (or FIP) then identifies how the state has chosen to achieve and maintain the NAAQS. The CAA thus provides a multifaceted framework on which the lead federal agency can soundly structure its own environmental reviews of projects, readily permitting the lead federal agency to tailor the scope of its review to the significance of the potential impacts.

4. Additional Programs

The CAA is not limited to the NAAQS/SIP program, it includes a number of additional programs that add additional layers of environmental protection and provide additional layers of environmental review—reviews that, in turn, may provide additional supporting data and analysis that the lead federal agency may rely on for its own NEPA analysis. We outline a few of these below.

a. New Source Performance Standards

The New Source Performance Standards ("NSPS") program is a federal program that requires specific categories of emissions sources to install the "best system of emission reduction" that are available to control emissions from that type of source when any such facility is constructed, expanded, or rebuilt. The Agency must update the NSPS standards at least every eight years.

The types of equipment involved in the projects that would be subject to these standards—e.g., compressor engines and turbines—are specifically listed categories of equipment under NSPS.[8] This means that EPA has already (i) fully evaluated the air quality impacts of these types of emission sources, (ii) identified the required type and level of mitigation (i.e., emissions reductions) that is technologically available and cost-effective for such facilities, and (iii) required any new units installed as part of its proposed projects to implement these mitigating measures as a precondition of installation.

As with the NAAQS and SIP development process, this analysis mirrors the impacts review required under NEPA. Accordingly, it would be appropriate for the lead federal agency to incorporate into its own NEPA documents any relevant NSPS analyses already performed by EPA, and to ensure that the project in question will install all required controls and comply with all applicable emissions limits.

b. National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAP) program is similar to the NSPS program, except it regulates Hazardous Air Pollutants (HAPs), rather than criteria pollutants like NOx and ozone. The NESHAP program originated with the NSPS list of source categories, which EPA revised to focus on HAP emissions. EPA has developed emissions standards for major sources of HAPs within each source category, based on the "maximum degree of reduction" that EPA concluded is achievable, based on a variety of considerations (typically referred to as the "maximum achievable control technology," or "MACT"). As with the NSPS, these standards must also be reviewed and revised every eight years to evaluate both improvements in control technology and the degree of risk remaining after the imposition of MACT controls.

As with the NSPS, the types of equipment involved in the pipeline projects are regulated under various NESHAPs. Accordingly, the lead federal agency should incorporate any applicable NESHAP analysis into its environmental review, both to address any HAP emissions, and to evaluate the impact that any controls required by the NESHAP may have on emissions of criteria pollutants.

[8] See 40 C.F.R. Part 60, JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines), KKKK (Standards of Performance for Stationary Combustion Turbines).