

**An Unpopular Victory:
Exploring EPA's 2015 Ozone NAAQS Revisions**

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Introduction

On October 1st, 2015, the Obama administration unveiled the Environmental Protection Agency's (EPA) updated Clean Air Act (CAA) standard for ozone, reducing the acceptable National Ambient Air Quality Standards (NAAQS) for ground-level ozone from 75 parts per billion (ppb) to 70 ppb.¹ To appreciate the significance of this regulatory move, it is important to first grasp the distinctions between "good" atmospheric ozone and "bad" ground-level ozone. Each type of ozone is a gas comprised of three oxygen atoms, but this inorganic molecule occurs naturally in the upper atmosphere between 6 and 30 miles above Earth's surface.² This atmospheric ozone is beneficial to humans because it forms a protective layer that shields Earth's surface from harmful ultraviolet rays. Ground-level ozone, however, is harmful. It is created when nitrogen oxides (NO_x) chemically react with volatile organic compounds (VOCs) in the presence of heat and sunlight and can then travel long distances via air currents.³ When breathed in high-concentrations, ground-level ozone can have adverse impacts on respiration. Control of ground-level ozone, therefore, has been a cornerstone of the CAA regulatory program for decades.

EPA's updated ozone standard marks the agency's first update to ozone regulation in seven years, having lowered the standard during the Bush administration from 80 to 75 ppb.⁴ Though some may mock EPA for "pleasing no one"⁵ with its final ozone rule, it is in this way that the 70 ppb standard triumphs, as celebration on either side of the proverbial aisle would only

¹ Press Release, EPA, EPA Strengthens Ozone Standards (Oct. 1, 2015).

² *Frequent Questions*, EPA, <http://www3.epa.gov/ozonedesignations/faq.htm>.

³ *Id.*

⁴ NAAQS for Ozone, 40 C.F.R. pt. 51.1100 *et seq.* (2012).

⁵ Kate Sheppard, *Obama Administration Releases Final Ozone Rule, Pleasing No One*, HUFFINGTON POST (Oct. 1, 2015, 6:14 PM), http://www.huffingtonpost.com/entry/obama-ozone-standard_560c6777e4b0dd85030ac005.

fuel potential litigation against the agency. To demonstrate that virtue of the final rule, this paper provides (1) the history leading up to the final rule; (2) a description of EPA’s rulemaking process; (3) a review of the substantive content of the final rule; (4) details regarding the rule’s procedural implementation; (5) an overview of reactions to the rule; and (6) an evaluation of the rule’s potential impact on Tennessee based in part on an interview with a state air quality policy official.

I. History

The CAA establishes an array of regulatory programs to combat air pollution. Among these, NAAQS rank as one of the CAA’s core mandates, as they are used to set nation-wide ambient air standards for “criteria pollutants” deemed to adversely impact public and environmental health.⁶ Sections 108 and 109 of the CAA govern the establishment, review, and revision process for NAAQS.⁷ Section 109(d)(1) of the CAA specifies that EPA shall revise the standard “at five-year intervals[,]” and complete “a thorough review of the criteria published under section 7408” in order to reevaluate the science upon which the previous standard was based.⁸ But based on this statutory timetable, EPA should have revised the ozone standard in March of 2013. The agency missed this deadline, and Earthjustice—a non-profit public interest law organization—filed suit in federal court to force EPA to issue its draft proposal and final ozone rule.⁹ Why the substantial, prohibited delay in EPA’s rule-making process?

⁶ *What Are the Six Common Air Pollutants?*, EPA, <http://www3.epa.gov/airquality/urbanair/>. The six criteria pollutants are particle pollution (frequently referred to as particulate matter), ground-level ozone, sulfur oxides, nitrogen oxides, carbon monoxide, and lead. *Id.*

⁷ 42 U.S.C. §§ 7408-7409 (1998).

⁸ 42 U.S.C. § 7409(d)(1) (1998).

⁹ John M. Broder, *Groups Sue After E.P.A. Fails to Shift Ozone Rules*, N.Y. TIMES (Oct. 11, 2011), http://www.nytimes.com/2011/10/12/science/earth/12epa.html?_r=0. Earthjustice sued EPA on behalf of the Environmental Defense Fund, Natural Resources Defense Council, American Lung Association, and the Appalachian Mountain Club. *Id.*

Answering this question requires a brief recounting of the myriad political interests and complex regulatory maneuverings that took place between 2008 and 2011. After the 2009 inauguration of President Obama, EPA stated that the 75 ppb standard the Bush administration set in 2008 was “not legally defensible” and should be lowered in the interest of public health and welfare.¹⁰ A prompt, significant decrease in the ozone standard seemed a foregone conclusion, and EPA’s rule revision process began on schedule; the agency released new draft rules in January 2010 intent on lowering the ozone standard to between 60 and 70 ppb.¹¹ However, the Obama administration received extraordinary pushback from industry lobbyists and congressional Republicans, who argued the new standard would impose too arduous a burden on industry and municipalities still feeling the effects of the 2008 financial crisis.¹² Due to this fierce opposition, in addition to fears of upsetting his reelection chances in 2012, President Obama abandoned EPA’s proposal on September 2, 2011, in an announcement that focused on “reducing regulatory burdens and uncertainty” in light of trying economic times.¹³ He also instructed EPA to leave the 75 ppb standard in place and delay consideration of the ozone standard until 2013.

Earthjustice soon thereafter filed its lawsuit against EPA for what they contended was a clear violation of CAA section 109(d)(1)’s five-year timetable. The American Lung Association—one of Earthjustice’s clients—also argued to Congress that the 75 ppb Bush-era standard doomed “[o]ver 186 million Americans” to breathe unhealthy levels of ozone

¹⁰ Gabriel Nelson, *Bush Ozone Standards Are ‘Not Legally Defensible’—EPA Chief*, N.Y. TIMES (July 14, 2011), <http://www.nytimes.com/gwire/2011/07/14/14greenwire-bush-ozone-standards-are-not-legally-defensibl-19743.html>.

¹¹ Extension of Deadline for Promulgating Designations for the 2008 Ozone NAAQS, 75 Fed. Reg. 2,936 (Jan. 19, 2010) (codified at 40 CFR pt. 81).

¹² John M. Broder, *Obama Administration Abandons Stricter Air-Quality Rules*, N.Y. TIMES (Sept. 2, 2011), <http://www.nytimes.com/2011/09/03/science/earth/03air.html>.

¹³ Press Release, The White House, Statement on the Ozone NAAQS (Sept. 2, 2011).

pollution,¹⁴ and focused on the pervasive congressional intent in sections 108 and 109 of the CAA that mandated EPA's duty to safeguard public health.¹⁵

In response to the Earthjustice suit, EPA argued it expected to take final action on the ozone standard by November 15, 2015, requiring the additional time due to: (1) the novel methodology the agency used to simulate ground-level ozone and analyze its effects on public health; and (2) the complexity of issues raised while assessing this new science. Earthjustice countered that “[r]ulemakings for [NAAQS] have always involved consideration of novel and complex scientific information, and courts have recognized that incorporating this type of evidence into a rulemaking does not justify extensive delay.”¹⁶ Notwithstanding, U.S. District Judge Yvonne Gonzalez Rogers granted Earthjustice summary judgment, denying EPA's cross-motion and imposing a court-ordered rulemaking schedule for ozone.¹⁷ EPA committed to meet the deadlines, but cautioned that “the deadlines present a challenge for [EPA] because there is a significant amount of scientific analysis and review required to update air quality standards.”¹⁸

I. The Rulemaking Process

Having explored the political backdrop for EPA's delay in the ozone rulemaking, we may now analyze the NAAQS rulemaking process itself. Each NAAQS consist of two parts: the primary standard, which “provide[s] public health protection, including protecting the health of ‘sensitive’ populations such as asthmatics, children, and the elderly[,]” and the secondary

¹⁴ Letter from Charles D. Connor to Rep. Henry A. Waxman and Rep. Edward J. Markey (June 24, 2009), <http://www.lung.org/assets/documents/advocacy-archive/letter-to-reps-henry-waxman-and-edward-markey-re-american-clean-energy-and-security-act.pdf>.

¹⁵ See 42 U.S.C. §§ 7408-7409 (1998).

¹⁶ Kurt Orzeck, *Judge Tells EPA to Finish Overdue Review of Smog Standards*, LAW 360 (Apr. 30, 2014), <http://www.law360.com/articles/533272/judge-tells-epa-to-finish-overdue-review-of-smog-standards>.

¹⁷ Orzeck, *supra* note 21.

¹⁸ *Id.*

standard, which “provide[s] public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.”¹⁹ Pursuant to CAA sections 108 and 109, EPA must periodically review the science upon which primary and secondary NAAQS are based, “allowing an adequate margin of safety” in the level of permitted criteria pollutants so as to “protect the public health.”²⁰

The NAAQS review process is a lengthy undertaking, comprised of five major phases: (1) planning; (2) Integrated Science Assessment (ISA); (3) Risk/Exposure Assessment (REA); (4) Policy Assessment (PA); and finally, (5) rulemaking.²¹ The NAAQS planning process entails the widespread gathering of input and questions about relevant issues from both the scientific community and the general public. Based on these assessments, EPA then prepares an Integrated Review Plan (IRP) that plots out the review’s timeframe, as well as pertinent scientific and policy issues to address along the way. EPA then compiles the scientific input it received during the planning process into an ISA, which is used to guide the REA—the quantitative risk assessments EPA uses to gauge the risks of exposing humans to the current and alternate standard(s) under consideration. Using these sources, EPA creates a PA, which aggregates staff analysis to help “bridge the gap” between the ISA and REA, focusing on factors most pertinent in evaluating the NAAQS’s core elements: indicator, averaging time, form, and level.²² Finally, EPA synthesizes the ISA, REA, and PA into a draft rule which is then vetted during a public comment period. Based on these comments, EPA conducts its final rulemaking. Note that prior to President Obama’s 2011 White House announcement that delayed the rulemaking process

¹⁹ *NAAQS*, EPA, <http://www3.epa.gov/ttn/naaqs/criteria.html>.

²⁰ 42 U.S.C. § 7409(b)(1) (1998).

²¹ *Process of Reviewing the NAAQS*, EPA, <http://www3.epa.gov/ttn/naaqs/review.html>.

²² *Id.*

until 2013, EPA had completed its planning phase, the ISA, REA, PA, and draft rule. All that remained was for EPA to finalize the rule.

II. The Final Rule - Substance

October 26, 2015 marked the publication of EPA's revised ozone standard in the *Federal Register*, and it will soon be codified in the *Code of Federal Regulations*.²³ From the final rule's opening sentences, it is clear that a desire to safeguard public health standards encompassed the driving force behind EPA's updated ozone standard. In the rule's executive summary, EPA attests to having carefully evaluated scientific literature (specifically that released after conclusion of the agency's 2008 review) regarding the impact ground-level ozone has on public health and welfare.²⁴ Based on EPA's research and analysis, the agency contends that a 70 ppb primary and secondary standard is "well below the O₃ exposure concentration shown to cause the widest range of respiratory effects[,]” and that this standard will provide increased protection for “at-risk” populations (children, the elderly, and people with existing lung diseases) from a host of adverse health effects, including reduced lung function and pulmonary inflammation.²⁵

EPA goes on to detail the quantitative risk assessments contained in the rule's REA that led the agency to conclude the Bush-era's 75 ppb standard did not provide the nation with an adequate margin of safety as required by the CAA. In fact, EPA's clinical studies suggested to the agency that even a 72 ppb standard could be harmful to healthy adults.²⁶ EPA's also explains that the new ozone standard is designed to protect the environment from dangerous concentrations of the pollutant, as the agency posits that strengthening the standard will improve the health of trees, plants, and ecosystems. The agency's ISA and PA included measuring the

²³ NAAQS for Ozone, 80 Fed. Reg. 65,292 (Oct. 26, 2015).

²⁴ *Id.* at 65,293.

²⁵ *Id.* at 65,294.

²⁶ *Id.* at 65,303.

effects ground-level ozone had on tree seedling growth in order to gauge the pollutant's full effect on vegetation. Based on this study, EPA concluded that in order to provide requisite protection to sensitive species and ensure broad ecosystem-level effects remain balanced, a 70 ppb ozone level would suffice.²⁷ EPA expects the revised standard will limit crop yield loss and foliar injury, improving annual harvest rates and securing national food stocks. The updated rule also includes an EPA overhaul of the Air Quality Index (AQI) in order to reflect revisions to the primary ozone standard,²⁸ as well as an amendment to the Prevention of Significant Deterioration (PSD) permitting program,²⁹ in which EPA added "a provision grandfathering certain pending permits from specific requirements with respect to the revised standards."³⁰

III. The Final Rule - Implementation Procedure

Though these represent the substantive changes to EPA's ozone NAAQS approach, the updated standard is also replete with procedural tweaks and minor adjustments geared towards expediting the implementation process for this and future NAAQS updates. In this regard, EPA anticipates the updated ozone standard's implementation will serve as a benchmark for executing other NAAQS revisions, especially when it comes to purging obsolete language for expired event deadlines from the register. With this being said, the agency still faces an uphill battle of implementation, as the procedure is full of stages and challenges.

After revising the ozone NAAQS under CAA section 109, EPA must work with states to ensure those NAAQS are realized. The first stage in this process is known as the "initial area

²⁷ *Id.* at 65,294.

²⁸ *Id.* at 65368. The AQI is a number used by government agencies to inform the public about current and projected air pollution. *Id.*

²⁹ The PSD permitting program is designed to help mitigate large industrial sources of air pollution in regions that meet the ozone standard, known as attainment areas. *See* 40 C.F.R. § 52.21 (2011).

³⁰ NAAQS for Ozone, 80 Fed. Reg. at 65,294.

designations,” which involves identifying attainment and nonattainment areas. Section 107(d)(1) of the CAA instructs EPA to require “the Governor of each state submit . . . a list of all areas . . . [that qualify as nonattainment, attainment, or unclassifiable].” Though reducing the acceptable primary and secondary ground-level ozone standards will mandate significant change for national energy and industry interests, the 2015 ozone standard update does not impose substantial procedural changes at the state and local government levels. EPA opted to retain the 2008 standard’s measuring process, which determines whether a region falls within ozone NAAQS attainment levels, and only made minor extensions to the ozone monitoring season for 33 states so as to ensure more accurate measurements.

No synopsis of the new ozone NAAQS would be complete without at least a brief overview of EPA’s measurement process. Using a nationwide network of Photochemical Assessment Monitoring Stations (PAMS), EPA has established ambient air quality trends for ozone.³¹ These trends are averaged over eight-hour periods, and the culmination of these national averages allow EPA to set ozone NAAQS pursuant to CAA section 109(c) and (d). If an area’s eight-hour average falls outside attainment levels or is contributing to a violation in a nearby area, it is considered nonattainment, and the area’s corresponding government must then devise and execute a State Implementation Plan (SIP) or risk losing forms of federal financial assistance.³²

Essentially, a SIP’s purpose is twofold: (1) to prove that the state has established an air quality management program capable of implementing the revised NAAQS; and (2) to identify emission control techniques and requirements the state will use to attain the primary and

³¹ *Ozone*, EPA, <http://www3.epa.gov/airtrends/ozone.html>.

³² 42 U.S.C. § 7407(d)(1)(A)(i).

secondary NAAQS.³³ Like EPA's final rule, state SIPs must too go through an extensive public comment period before they are submitted to EPA, which then notifies the state of any intended modifications to the SIP. The CAA further provides that EPA will take no longer than two years to promulgate the designations of all areas, though this period may be extended for up to one year in the event EPA has insufficient information to designate an area as in attainment or not.³⁴

EPA acknowledges that successfully implementing the new ozone NAAQS will require vertical collaboration between federal government, states, tribes, and local air agencies, all of whom play an integral role in reducing pollution to meet the standard. This partnership has perpetuated ozone standards since their introduction over three decades ago; during this span, ozone levels have consistently dropped in correlation with standard updates, encouraging EPA in its decision to lower levels once more.³⁵

Chief among states' concerns in implementing the new standard, however, is the simple fact that air is an amorphous, ubiquitous, and largely unpredictable medium. Indeed, recent studies show ozone is a "hemispheric pollutant" and that local and national emission reductions will not always produce an analogous reduction in atmospheric and ground-level concentrations due to tropospheric transport of ozone.³⁶ For example, East Asian emissions have been consistently implicated in tropospheric ozone levels in western North America; between 2005 and 2010, scientists estimated Asian air pollution pushed Southern California above the then 75

³³ *Basic Information*, EPA, <http://www3.epa.gov/airquality/urbanair/sipstatus/overview.html>. SIPs must also include basic program requirements for managing air quality required in section 110(a)(2) of the CAA. *Id.*

³⁴ 42 U.S.C. § 7407(d)(1)(B).

³⁵ See AIRNow Archives, AIRNOW, <http://www.airnow.gov/index.cfm?action=airnow.mapsarchivecalendar> (providing an archive of air quality maps).

³⁶ Ruth M. Doherty, *Ozone Pollution from Near and Far*, 73 NATURE 664 (2015).

ppb standard in roughly 53% of recorded exceedances.³⁷ Air’s many nuances, of course, are not lost on EPA—the agency promises in the new rule to aid states in identifying locations with naturally high ozone concentrations due to “stratospheric intrusions of O₃, wildfire O₃ plumes, or long-range transport . . . from sources outside the U.S.”³⁸ EPA hopes that with state support, they can ensure appropriate CAA regulation.

V. Competing Positions

Five states sued EPA on October 27, 2015 over the new 70 ppb standard, claiming that EPA’s scientific review did not justify the anticipated costs associated with implementing the revised standard,³⁹ and that the final rule “completely ignores Congress’s intent that EPA set ozone levels for the states that are actually attainable.”⁴⁰ To back up these arguments, opponents contend a 70 ppb standard will automatically place 241 counties across the country in non-compliance.⁴¹ On its face, however, this number is misleading—227 counties were already trying to comply with the 75 ppb standard before EPA revised the ozone NAAQS; this revision only places 14 additional counties in noncompliance.⁴² Nonetheless, this statistic merits concern, as many local governments are now convinced that achieving attainment levels for ozone is impossible.⁴³ This is due in large part to both tropospheric transport of ozone from Asia as

³⁷ *Id.*

³⁸ NAAQS for Ozone, 80 Fed. Reg. 65,292, 65,328 (Oct. 26, 2015).

³⁹ Devin Henry, *Five States Sue Over EPA’s Ozone Rule*, HILL (Oct. 28, 2015) <http://thehill.com/policy/energy-environment/258343-five-states-sue-over-ozone-rule>. Arizona, Arkansas, New Mexico, North Dakota, and Oklahoma comprise the five states. *Id.*

⁴⁰ *Id.*

⁴¹ Cole Mellino, *26 National Parks Fail EPA’s New Ozone Standard*, ECOWATCH (Nov. 11, 2015) <http://ecowatch.com/2015/11/11/national-parks-fail-ozone-standard/>.

⁴² *Id.*

⁴³ The San Joaquin Valley Air Pollution Control District’s director recently testified before Congress that even a total moratorium on all fossil fuel combustion in the region would not result in 70 ppb attainment. *Testimony of Seyed Sadredin: Hearing Before the Cong. Committee on Science, Space and Technology*, 114th Cong. (October 22, 2015).

discussed above, as well as natural background ozone concentrations which can reach upwards of 50 to 60 ppb.⁴⁴ In areas beset by these phenomena, it would seem as if EPA is obligated to entertain alternative measures for compliance.

Another lawsuit filed against EPA over the new standard belongs to Murray Energy Corporation (“Murray”)—the nation’s largest privately owned coal company.⁴⁵ Murray has claimed “the ozone rule is yet another illegal and destructive action aimed at killing jobs[,]” which amounts to a carbon copy of the company’s response to EPA’s Clean Power Plan, released on August 3, 2015, over which the coal behemoth has also sued EPA.⁴⁶ Lacking any substantive argument as to how EPA abused its discretion in setting forth the updated ozone standard, however, it is easy to dismiss Murray’s suit as yet another attempt by the fossil fuel industry to demonize EPA as a job-killing, coal-hating puppet of the Obama administration. Yet, no appeal to job security can be ignored, and the lawsuit puts EPA on the defensive in this regard.

On the other side of the spectrum, a variety of public health and environmental interest groups have criticized EPA’s revised 70 ppb ozone standard as not going far enough. The National Parks Conservation Association argues that a 70 ppb standard will leave 26 national parks in non-compliant levels, and that the revision, though a “much-needed step . . . will not have the health benefits it could and fails to establish a separate and necessary standard for ecosystems.”⁴⁷ Instead of pursuing litigation, it seems these groups will instead confine their response to vocal disappointment and hopeful suggestions that EPA pursue other means to

⁴⁴ *Id.*

⁴⁵ MURRAY ENERGY CORPORATION, <http://www.murrayenergycorp.com/> (last visited Nov. 22, 2015). Murray Energy employs approximately 7,500 people in the United States and produces 65 million tons of coal per year. *Id.*

⁴⁶ Joanna M. Foster, *Murray Energy Sues EPA Over New Carbon Rule*, CLIMATE PROGRESS (June 19, 2014), <http://thinkprogress.org/climate/2014/06/19/3450752/murray-energy-sues-epa-coal/>.

⁴⁷ Mellino, *supra* note 53.

reduce air pollution, such as through the Regional Haze Rule currently under review.⁴⁸ As EPA's tree seedling study illustrated a 70 ppb standard will generally improve the health of trees, plants, and ecosystems, it seems unlikely that the agency will further strengthen the ozone NAAQS in order to further appease environmental interests.

Though EPA has argued that the updated 70 ppb ozone standard will produce \$2.9 to 5.9 billion in annual public health benefits (exceeding the agency's projected annual cost of \$1.4 billion for implementing the new standard),⁴⁹ including the prevention of thousands of asthma attacks, many public health proponents claim the standard was not strengthened enough. These health and welfare advocates point to EPA's own studies, in which the agency concluded that exposure to ground-level ozone pollution can cause "chest pain, coughing, throat irritation, and congestion[,]” and that “[i]t can worsen bronchitis, emphysema, and asthma,” in arguing that the agency should have done everything in its power to protect at-risk populations from harmful ground-level ozone concentrations. To these complaints, EPA can only point to its studies, peer-reviewed science, and public comments. Juggling so many insights and interests is an imposing task, and in light of President Obama's deferral of the ozone rule in 2011, perhaps public health and environmental interest groups should breathe (pun intended) a sigh of relief that the standard has finally been strengthened. In this same vein of thought, perhaps the 70 ppb standard should prompt equivalent consolation amongst industry interests—after all, EPA previously suggested any ozone NAAQS between 60 and 70 ppb was fair game.

⁴⁸ The Regional Haze Rule focuses on improving air quality in national parks and wilderness areas. *EPA's Regional Haze Program*, EPA, <http://www3.epa.gov/visibility/program.html>.

⁴⁹ *Overview of EPA's Updates to the Air Quality Standards for Ground-Level Ozone*, EPA, <http://www3.epa.gov/ozonepollution/pdfs/20151001overviewfs.pdf>.

VI. Implications for Tennessee

Having analyzed the many intricacies of EPA's revised ozone standard, including the multitude of interests that both sculpted the final rule's inception and will continue to dictate its future, let us turn our focus to the state of Tennessee. Based on county-level design values for the 2015 ozone NAAQS, three of Tennessee's 14 most populous counties—Jefferson (71 ppb), Shelby (73 ppb), and Sumner (72 ppb)—fall just outside of 70 ppb attainment.⁵⁰ Consequently, the Tennessee Department of Environment and Conservation (TDEC) will need to take steps to ensure these areas achieve attainment levels—a task easier said than done. Mr. Ben Bolton currently aids in the administration of competitive grants for TDEC's Office of Energy Programs (OEP),⁵¹ and allowed me to interview him for the purpose of this paper.

Chief among Bolton's concerns is that EPA's revised ozone standard is nearing a cost-benefit tipping point: the volatile organic compounds (VOCs) that come from, *inter alia*, automobile exhaust and paint fumes on hot, sunny days are becoming increasingly more expensive to prevent. Following a national shift to water-based paint—a variant containing no VOCs, thus lacking capacity to contribute to ozone pollution—in the mid-2000s, EPA and states have struggled to pinpoint cost-effective VOCs to eliminate. In essence, there is no more “low-hanging fruit” to target for regulation.

As a result, much of EPA's recent attention in combatting ground-level ozone has targeted NO_x. A generic term for the mono-nitrogen oxides, NO and NO₂, NO_x primarily results from the process of incomplete combustion, commonly observed in faulty internal combustion engines. While complete combustion primarily yields CO₂ and water vapor, incomplete

⁵⁰ *County-level Design Values for the 2015 Ozone Standards*, EPA, <http://www3.epa.gov/ozonepollution/pdfs/20151001datatable20122014.pdf>.

⁵¹ *Meet the Team*, TDEC, <http://www.tn.gov/environment/article/energy-meet-the-team>.

combustion results in the contamination of fumes with noxious particulate matter and gases, and in areas of high motor vehicle traffic (*e.g.*, a city) it can lead to significant amounts of ground-level ozone.⁵² Bolton explained that regulating NO_x is fairly straightforward, as the process occurs when internal combustion engines do not receive enough oxygen to allow gasoline and other fuels to fully combust. Thus, governments must encourage automobile manufactures to produce functional engines, incentive owners to exchange their old cars,⁵³ and mandate cleaner fuel blends in the summer when conditions are optimal for ground-level ozone formation.

But, as was the case with VOCs, there exists a limited number of affordable NO_x regulations that state governments can implement to achieve attainment ozone levels. Ultimately, money spent combatting VOCs and NO_x is money that cannot be spent improving quality of life in other sectors.

Conclusion

A massive rule with far-reaching political, economic, and social implications, EPA's revised 70 ppb standard will dictate decisions of all manner of individual and entity in the coming years. The rule also embodies a growing storyline in our national policy debate: liberal, public health, and environmental interests are becoming more and more polarized from their conservative, industry, and fossil fuel counterparts. Caught in the middle of this ideological warfare is EPA, which faced a tall task in juggling this variety of agendas. Interestingly enough, by failing to fully satisfy anybody, the 70 ppb standard did exactly what it was supposed to do.

⁵² Hamid Omidvarborna et al., *NO_x Emissions from Low-Temperature Combustion of Biodiesel Made of Various Feedstocks and Blends*, 140 FUEL PROCESSING TECH. 113, 118 (Dec. 2015).

⁵³ See CASH FOR CLUNKERS, <http://www.cashforclunkers.org/> (last accessed Mar. 15, 2016).