



Environmental and Energy Study Institute

February 21, 2019

Mr. Mike Sikula, Director
New York State Division of Weights & Measures
10B Airline Drive
Albany, NY 12235

Dear Mr. Sikula:

I am writing on behalf of the Environmental and Energy Study Institute (EESI), a nonpartisan nonprofit dedicated to promoting sustainable solutions. Founded in 1984 by a bipartisan Congressional caucus, EESI advances innovative policy solutions that set us on a cleaner, more secure and sustainable energy path, while supporting a robust economy.

EESI would like to express support for the adoption of rules promulgated in the Federal Register (16 CFR §306) allowing the sale of E15 (15 percent ethanol, 85 percent gasoline) within New York State.

EESI has long supported the domestic renewable fuels industry, as renewable fuels such as ethanol, biomass based diesel, biogas, and others, represent a marked improvement over gasoline and diesel fuels for both human health and the environment. EESI has examined the peer-reviewed literature on ethanol blending, including E15 and higher blends. The general consensus is that **E15 is a step in the right direction, offering an improvement in emissions, price and performance over regular E10, today's base fuel.**

According to the U.S. EPA, 45 million Americans live within 300 feet of a major roadway, airport, or railway. While electrification of the transportation sector ultimately represents the greatest *potential* reduction in both air pollutants and greenhouse gases, **taking immediate steps to improve air quality, such as utilizing higher blends of biofuels, will have a positive impact on urban air quality, especially for those most vulnerable to the impacts of air pollutants.**

In particular, displacing the so-called "gasoline aromatics," a highly toxic petrochemical mixture used to provide octane to gasoline -- with greater volumes of ethanol -- represents one of the most cost-effective and immediately available improvements for public health in the urban environment.

The retail gasoline market has seen a marked uptick in sales and interest in E15 in the past few years. Retailers choose to offer E15 because it is a price-competitive, higher octane option that offers higher profit margins to station owners. Indeed, the U.S. Environmental Protection Agency (EPA), is poised to lift the one-pound waiver this year, which erroneously blocks the year-round sale of E15. It is estimated that once the one pound waiver is lifted, tens of thousands



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of retail gasoline stations in the United States will begin offering E15, instead of the thousands that offer it today.

Below we have summarized the major findings on both E15 and air quality, and E15 and greenhouse gases.

E15 and Air Quality:

When considering the air quality impacts of increasing the ethanol content of gasoline, both the evaporative emissions and tailpipe emissions must be considered. Increasing ethanol content from E10 to E15 reduces harmful volatile organic compound (VOC) emissions, displaces cancer-causing emissions, and reduces smog-forming potential, as well as cuts greenhouse gas emissions. Ethanol blends above E15 further dilute the presence of these harmful compounds in gasoline.

Evaporative emissions: Evaporative emissions are gasoline vapors emitted from the fuel system and engine. When [EPA assessed the impact of E15 on emissions](#) from model year 2001 and newer vehicles, it found “E15 is likely to result in somewhat lower evaporative emissions compared to fuel currently sold in much of the country (E10) as a result of the lower volatility of E15.”

Volatile organic compounds (VOC): VOCs are a class of chemicals that vaporize at room temperature. The increased use of ethanol displaces the use of aromatic hydrocarbon additives (the “gasoline aromatics”) in gasoline—specifically the BTEX complex (benzene, toluene, ethylbenzene and xylene), which has a high cancer-causing potential. Already, the use of ethanol (as E10) has reduced aromatic content of the fuel supply by 25 percent.

The displacement of BTEX means there is a resultant decrease in toxic VOCs, such as 1-3 butadiene, at the tailpipe. While increasing the ethanol content of gasoline from E10 to E15 does increase the cancer risk associated with acetaldehyde by 1 percent, it decreases the cancer risk of 1-3 butadiene by 6.6 percent.

BTEX also contribute to the formation of secondary air pollutants, including ultrafine particulate matter (UFP) and polycyclic aromatic hydrocarbons (PAHs). Numerous health studies have linked both tailpipe exhaust and the BTEX complex itself to serious developmental and many chronic health conditions. Therefore, any steps to reduce the volume of these compounds through greater use of biofuels is a positive step for air quality.

Ozone: The main ozone precursors are carbon monoxide (CO) and nitrous oxide (NOx). Carbon monoxide emissions decrease when using higher amounts of ethanol. For NOx, numerous studies



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have found no statistically significant increase in NO_x when increasing ethanol blending from E10 to E15. Vehicle age likely has more of an impact on NO_x emissions than increased ethanol use.

Vehicle age: In 2007, the National Renewable Energy Lab (NREL) tested the impact of various ethanol blends on emissions in a series of older vehicles. Testing was performed with E0, E15 and E20 blends on make and model 2000 and 2009 vehicles. The vehicles were aged to 120,000 miles and, in some cases, 170,000 miles, using the various ethanol blends as well as ethanol-free gasoline (E0). NREL found that both E15 and E20 blends did not result in higher tailpipe emissions in older vehicles, as compared to ethanol-free fuels. Moreover, the use of E15 and E20 did not damage vehicle catalysts, a common concern.

E15 and Greenhouse Gases:

Under the Renewable Fuel Standard (RFS), conventional ethanol (primarily corn ethanol) must meet a minimum greenhouse gas reduction of 20 percent relative to gasoline. Recent research from the U.S. Department of Agriculture has found that domestically-produced corn ethanol is, on average, 43 percent less GHG intensive than gasoline. Cellulosic ethanol, sourced from crop wastes and purpose-grown crops (rather than edible plant matter), must be 60 percent less GHG intensive than gasoline. According to modeling from the U.S. Department of Energy, cellulosic ethanol can reduce GHG emissions between 90 and 115 percent, relative to gasoline, depending on the feedstock.

If corn ethanol is used, a 5 percentage point increase in ethanol blending (from E10 to E15) represents an additional 1.5 percent reduction in GHG emissions. Increasing the volume of ethanol from 10 to 15 percent of the fuel supply would therefore reduce greenhouse gas emissions from the transportation sector.

Please do not hesitate to reach out to me with any additional questions you may have on this important topic.

Sincerely yours,

A handwritten signature in black ink that reads "Carol Werner". The signature is written in a cursive, flowing style.

Carol Werner
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