U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON ENVIRONMENT

HEARING CHARTER

Mid-Level Ethanol Blends: Consumer and Technical Research Needs

Tuesday, February 26, 2013
2:00 p.m. - 4:00 p.m.
2318 Rayburn House Office Building

PURPOSE

On Tuesday, February 26 at 2:00 p.m. in Room 2318 of the Rayburn House Office Building, the Science, Space, and Technology Subcommittee on Environment will hold a hearing titled, *Mid-Level Ethanol Blends: Consumer and Technical Research Needs*. The purpose of this hearing is to examine the scientific, technical, and consumer impacts of the Environmental Protection Agency's decision to allow the introduction of mid-level ethanol blends (E15) into the marketplace. Additionally, the hearing will examine the impact of E15 on engines and fuel supply infrastructure, and identify research gaps or areas in which policymakers and the public could benefit from more information on the fuel. The subcommittee will also receive testimony on related draft legislation.

WITNESS LIST

- **Mr. Robert L. Darbelnet,** President and CEO, American Automobile Association (AAA)
- **The Honorable Wayne Allard,** Vice President, Government Relations, American Motorcyclist Association (AMA)
- **Mr. Mike Leister**, Member, Board of Directors, Coordinating Research Council (CRC)

BACKGROUND

National consumption of gasoline and gasoline products has grown from 96.5 billion gallons a year in 1974 (the year the oil embargo ended) to 134 billion gallons a year in 2011.[1] As part of an effort to reduce reliance on foreign sources of oil, the Federal Government has supported numerous policies to increase efficiency of fuel use and supplant oil sources since the 1970s. One of these initiatives includes the production and use of biofuels through various tax incentives. More recently, this support is evidenced in the establishment of the Renewable Fuel

[1] Energy Information Administration. http://www.eia.gov/tools/faqs/faq.cfm?id=23&t=10

Standard (RFS) in the Energy Policy Act of 2005 (EPAct).[2] The RFS mandates that transportation fuels contain renewable fuels, such as biodiesel or corn-based ethanol. This was accomplished by a mandate that required 4 billion gallons of renewable fuels be blended into in the national fuel mix by 2006, and 7.5 billion by 2012.

Congress greatly expanded the RFS requirement in the Energy Independence and Security Act of 2007 (EISA), mandating blending of 15.2 billion gallons of biofuels by 2012, and 36 billion gallons by 2022.[3] The RFS expansion also required the use of advanced biofuels, and capped the amount of corn-based ethanol that could be used to meet the mandated volumes at 15 billion gallons.

The use of E10, or ten percent ethanol blended gasoline, was authorized by the EPA for use in 1978. Despite this authorization, E10 was not used on a widespread basis until the Clean Air Act Amendments of 1990 mandated the use of an oxygenate in fuel. By that time, the vehicle fleet had the necessary technology to absorb this level of ethanol in the fuel mix. Blending fuel at concentrations greater than E10 in order to meet the increased production volumes required by the RFS presents a challenge. This challenge is referred to as the "blend wall," or upper limit to the total amount of ethanol that can be blended into the national gasoline supply using E10. In an effort to avoid the blend wall, on March 6, 2009, Growth Energy and 54 ethanol manufacturers petitioned EPA to allow E15, a mid-level or intermediate ethanol blend, into the commercial marketplace. Under the Clean Air Act, the introduction of a new fuel is prohibited unless it is "substantially similar" to gasoline; however, the EPA is authorized to grant a waiver of this prohibition.

The EPA issued a partial waiver for E15 on October 13, 2010, allowing the introduction of E15 into the commercial marketplace for use in model year 2007 and newer cars, light-duty trucks, and SUVs. On January 26, 2011, EPA granted another partial waiver for use of E15 in model year 2001 and newer vehicles. The EPA did not grant a waiver for the use of E15 fuel in model years prior to 2001, non-road engines, vehicles, and equipment, motorcycles, or heavy-duty gasoline engines.

In order to grant these waivers, Section 211 (f) of the Clean Air Act requires the EPA to first determine that E15 would not "cause or contribute to a failure of an emission control device or system." This determination by EPA was based largely on a single set of tests conducted by the Department of Energy (DOE) in 2009-10. Referred to as the DOE Catalyst Study, the testing program only included 8 models of vehicles made in 2001-2006, and 19 models representing 2007 and newer vehicles.

[2] P.L. 109-58, Energy Policy Act of 2005. Aug. 8, 2005.
[3] P.L. 110-140, Energy Independence and Security Act of 2007. Dec. 19, 2007.

In June 2011, EPA issued a misfueling rule intended to mitigate the potential for consumer confusion. The rule mandated a new label to be used on pumps at stations that sell E15, and it encourages, but does not require, measures to educate consumers about E15. The EPA's partial waivers also include conditions that require each fuel and fuel additive manufacturer subject to waivers to submit a misfueling mitigation plan (MMP). These conditions include measures for labeling E15 fuel pump dispensers, among other things. Despite several public concerns raised to the EPA, the agency approved the Model MMP submitted by the Renewable Fuels Association as "sufficient" to satisfy the partial waiver requirements on March 15, 2012. Since then, E15 has been introduced into the commercial marketplace in Iowa and Nebraska and, driven by RFS requirements, is expected in other parts of the U.S. soon. Additionally, the EPA approved a new blender pump configuration on February 7, 2013. This configuration was submitted by the Renewable Fuels Association for use by retail stations that plan to dispense E15 and E10 from a common hose and nozzle.

Coordinating Research Council Tests

The Coordinating Research Council is a non-profit research entity that directs engineering and environmental studies on the interaction between automotive and mobility equipment and petroleum products. The CRC has a research program on intermediate ethanol blends, and has released two reports on the impact of E15 fuels conducted under the direction of the Advanced Vehicle/Fuel/Lubricants Committee.

The first of these studies, released in April 2012, is the *Intermediate-Level Ethanol Blends Engine Durability Study*.[4] The study aimed to "investigate the effects of two intermediate-level ethanol blends on several models of current, on-road, non-Flex Fuel Vehicles." The study highlighted possible engine component wear caused by ethanol content in E15 and E 20 fuels, and identified various types of failures exhibited by engines running on E15 and E20. In summary, the report noted, "12 out of 28 engines were deemed to have failed the prescribed durability test."

The CRC released a follow-up report to the engine durability study, titled *Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15* last January.[5] The study assessed the impact of E15 on the performance and durability of fuel pumps and fuel level senders, and concluded that while some fuel systems survived testing on E15, others experienced complete failures that would prevent operation. Additionally, the study noted that the fuel pumps

[4] Coordinating Research Council, *Intermediate-Level Ethanol Blends Engine Durability Study*, April 2012. Accessible at: http://www.crcao.com/reports/recentstudies2012/CM-136-09-1B%20Engine%20Durability/CRC%20CM-136-09-1B%20Final%20Report.pdf

[5] Coordinating Research Council, *Durability of Fuel Pumps and Fuel Level Senders in Neat and Aggressive E15*, January 2013. Accessible at: http://www.crcao.com/reports/recentstudies2013/CRC%20664%20%5BAVFL-15a%5D/AVFL%2015a%20%5BCRC%20664%5D%20Final%20Report%20only.pdf

and level senders that "failed or exhibited other effects during testing…are used on a substantial number of the 29 million 2001-2007 model year vehicles…"

Warranty Issues

Given the potential for E15 to negatively impact engines, concerns have been raised and questions asked regarding warranty coverage for use of the fuel. Several manufacturers, including BMW, Nissan, Chrysler, Toyota, and Volkswagen, have stated their warranties will not cover fuel-related claims caused by the use of E15. Additionally, eight automakers, including GM, Ford, Honda, Hyundai, Kia, Mazda, Mercedes-Benz, and Volvo, have indicated that use of E15 does not comply with the fuel requirements in their owner's manual, and may invalidate or void warranty coverage.[6]

In June 2011, Rep. Sensenbrenner sent letters to 14 automobile manufacturers inquiring as to the relationship between vehicle damage resulting from the use of E15 and vehicle warranties.[7] Specifically, the letters asked three questions: (1) Will E15 damage engines of Model Year 2001 and later? (2) Will your warranties cover damage from E15? And (3) Will E15 negatively affect fuel efficiency. All 14 companies responded with letters outlining their concerns with E15 use and affirmed the potential for E15 to negatively impact their vehicles and cause engine damage. Furthermore, the manufacturers indicated that their vehicle fleets were not designed to operate on E15, and stated that the warranties would not cover damage resulting from E15. as of January 2013, only Ford and General Motors have certified their Model Year 2013 lines for use with E15.

Legislative Summary and History

In the 112th Congress, the Science, Space, and Technology Committee passed H.R. 3199, authored by Rep. Sensenbrenner. This legislation required that a comprehensive assessment of the scientific and technical research on the implications of the use of mid-level ethanol blends be conducted prior to the implementation of any waiver decision for E15. The bill directed the EPA Administrator, acting through the Assistant Administrator of the Office of Research and Development, to enter into an agreement with the National Academy of Science (NAS) to provide such an assessment.

The NAS assessment would provide a comparison of mid-level ethanol blends to gasoline blends containing both ten percent (E10) and zero percent ethanol. Other components of the

[6] American Automobile Association, *New E15 Gasoline May Damage Vehicles and Cause Consumer Confusion*, November 30, 2012. Accessible at: http://newsroom.aaa.com/2012/11/new-e15-gasoline-may-damage-vehicles-and-cause-consumer-confusion/

[7] Rep. Sensenbrenner to Lisa Jackson, U.S. Environmental Protection Agency, July 5, 2011. http://sensenbrenner.house.gov/uploadedfiles/e15_auto_responses.pdf

assessment would include: (1) an evaluation of both short-term and long-term environmental, safety, durability, and performance effects of the introduction of mid-level ethanol blends on onroad, nonroad, and marine engines, onroad and nonroad vehicles, and related equipment; and (2) an identification of gaps in research and understanding related to numerous issues. The assessment would also identify areas of research, development, and testing necessary to: (1) ensure that existing motor fuel infrastructure is not adversely impacted by mid-level ethanol blends, and (2) reduce the risk of misfueling by users at various points of the distribution and supply chain.

Additional Reading:

- Hearing Charter: *Conflicts and Unintended Consequences of Motor Fuels Standards*, Subcommittee on Energy and Environment, Committee on Science, Space, and Technology. November 2, 2011.
- Hearing Charter: *Hitting the Ethanol Blend Wall: Examining the Science on E15*, Subcommittee on Energy and Environment, Committee on Science, Space, and Technology. July 7, 2011.
- National Academies of Science report, *Renewable Fuel Standard: Potential Economic and Environmental Effects of U.S. Biofuel Policy*, October 2011.

Discussion Draft
Section-by-Section Analysis

Purpose: To provide for a comprehensive assessment of the scientific and technical research on the implications of the use of mid-level ethanol blends, and for other purposes.

Section 1: Definitions

Section 1 provides definitions, including: "Administrator" and "Mid-Level Ethanol Blend."

Section 2: Evaluation

Section 2 (a) requires the Administrator, acting through the Assistant Administrator of the Office of Research and Development at the Environmental Protection Agency to: (1) enter into an agreement with the National Academies of Sciences to provide a comprehensive assessment of the scientific and technical research on the implication of the use of mid-level ethanol blends, including a comparison of mid-level ethanol blends to gasoline containing ten percent or zero percent ethanol; and (2) transmit the report to the Committee on Science, Space and Technology and the Committee on Environment and Public Works within thirty days of receiving the results, along with the disagreement or agreement of the Administrator with the findings.

Section 2 (b) invalidates any waiver granted by the Agency prior to enactment under section 211 (f) (4) of the Clean Air Act that allows the introduction into commerce of mid-level ethanol blends. The Administrator is prohibited from granting new waivers under section 211 (f) (4) until after the submission of the report described in subsection (a) (2).

Section 2 (c) requires the assessment performed under subsection (a) include:
(1) an evaluation of the short and long-term environmental, safety, durability, and performance effects of the introduction of mid-level ethanol blends on onroad, nonroad, and marine engines, vehicles, and related equipment. The evaluation shall also include consideration of the impacts of qualifying mid-level ethanol blends or blends with higher ethanol concentration as a certification fuel, and a review of all available scientific evidence, including all relevant government and industry data and testing, including that which was relied upon by the Administrator and published in the federal register. Additionally, the study shall identify gaps in understanding and research needs related to

(A) tailpipe emissions; (B) evaporative systems; (C) engine and fuel system durability; (D) onboard diagnostics; (E) emissions inventory and other modeling effects; (F) materials compatibility; (G) operability and drivability; (H) fuel efficiency; (J) consumer education and satisfaction; (K) cost-effectiveness for the consumer; (L) catalyst durability; and (M) durability of storage tanks, piping, and dispensers for retail.

The study shall also include: (2) An identification of areas of research, development, and testing necessary to (A) ensure that existing motor fuel infrastructure is not adversely impacted by mid-level ethanol blends; and (B) reduce the risk of misfueling by users at various points in the distribution and supply chain by: (i) assessing the best methods and practices to prevent misfueling; (ii) examining misfueling mitigation strategies for blender pumps; (iii) assessing the adequacy and ability of misfueling mitigations plans approved by EPA; and (iv) examining the technical standards and recommendation of the National Institute of Standards and Technology, the American National Standards Institute, and the International Organization for Standardization regarding fuel pump labeling.

Section 3: Authorization of Appropriations

Section 3 requires the Administrator utilize up to $900,000 from the funds made available for science and technology, including research and development activities, at the Environmental Protection Agency to carry out this Act.