

# Roadmap to “Enhanced” Implementation of RFS2 in the Midwest Region

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## **Background**

A new study by Air Improvement Resource, Inc. (AIR) demonstrates that implementation of the recently finalized expanded Renewable Fuels Standard (RFS2) would lead to a 7.6-7.7% reduction in greenhouse gas (GHG) emissions from transportation fuels in the Midwest by 2022. The study also modeled an “Enhanced RFS2” program in which the Midwest uses disproportional volumes of cellulosic ethanol from corn stover. This case would allow the Midwest region to achieve a 10% GHG reduction by 2022. The study was initiated by a coalition of Midwestern stakeholders<sup>1</sup> who expressed interest in examining alternatives to a regional Low Carbon Fuels Standard (LCFS) being pursued by the Midwestern Governors Association.

In addition to modeling the potential regional GHG benefits of the RFS2 program, the AIR analysis clearly underscores the need for rapid development and deployment of vehicles and refueling infrastructure capable of consuming and dispensing RFS2-required volumes of biofuels. Specifically, the study highlights the need for dramatically increased production and use of Flex-Fueled Vehicles (FFVs) and deployment of blender pumps (also sometimes referred to as flex-fuel pumps) to meet RFS2 biofuel volume requirements and regional GHG reduction goals.

This document summarizes key findings from the AIR study regarding the need for more FFVs and blender pumps. In addition, this document offers corresponding recommendations that should be pursued by state governments to achieve the levels of FFVs and blender pumps necessary to consume RFS2-required volumes of biofuels.

## **Flex-Fueled Vehicles**

The AIR study found that, based on the current commitment of Ford, General Motors, and Chrysler to increase FFV production to 50% of output by 2012, about 24% of the Midwest’s light-duty vehicle fleet would be FFV-capable by 2022. This means that under a “business as usual” case, available FFVs would need to average E66 (66% ethanol/34% gasoline) to consume RFS2-required volumes of biofuels in the Midwest. In other words, FFVs would need to refuel with E85 approximately 75% of the time. When E15 is approved for all conventional automobiles, the average ethanol level required in FFVs would drop to E52.

In the “Enhanced RFS2” case (i.e., the Midwest uses more than its proportional “share” of cellulosic ethanol from corn stover) with “business as usual” FFV deployment, FFVs would need to average E79. This means FFV drivers would need to refuel with E85 virtually all of the time (92%). E15 approval for conventional automobiles would drop the average ethanol level required in FFVs to E67 in this case.

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<sup>1</sup> The AIR study and these corresponding recommendations are supported by the Renewable Fuels Association, Growth Energy, National Corn Growers Association, Monsanto Company, Illinois Corn Growers Association, Iowa Corn Growers Association, Minnesota Corn Growers Association, Missouri Corn Growers Association, Nebraska Corn Board and Ohio Corn Growers Association.

Clearly, more FFVs are needed in the Midwest to consume RFS2-required volumes of biofuels. While there would theoretically be enough FFVs in the Midwest in 2022 to physically consume RFS2 volumes, it is highly unlikely—for a variety of reasons—that FFV drivers would refuel with E85 as often as 75-92% of the time.

The AIR study modeled the impacts of doubling the current trajectory of FFVs to simulate a scenario in which *all* automakers initiated a commitment to increasing FFV production to half of their output by 2012 (rather than just Ford, GM, and Chrysler). Under this scenario, the average level of ethanol required in FFVs dropped to E43 in the case where conventional autos are limited to E10. The level dropped to E36 in the case where E15 is used in the conventional auto fleet.

AIR also examined a scenario where all automakers increase FFV production to 40% of output in 2013, 80% in 2014 and 100% in 2015 and subsequent years. Under this scenario, the average ethanol level required in FFVs would be less than E30 for the normal RFS2 case and E36 for the “enhanced” RFS2 case by 2022. This implies that to consume RFS2-required volumes, FFV drivers could fill up with E85 approximately one-third of the time or refuel with mid-level blends (such as E30 or E40; these blends above E15 are sometimes also referred to as Flex Fuels) more frequently at blender pumps. Not only would this approach offer maximum flexibility and choice to drivers in the Midwest, but it would also ensure that RFS2-required volumes of biofuels are consumed.

*Recommendations:*

- Support rapid deployment of FFVs in the Midwest by backing a Federal requirement for all vehicles sold in the United States to be FFV-capable by a date certain.
- Support state and local efforts to educate owners of FFVs on the capabilities of their vehicles and locations to access ethanol blends above E10.
- Support state and local efforts to educate auto dealers on the capabilities of FFVs, benefits of using ethanol blends, and locations to access ethanol blends above E10.

**Refueling Infrastructure**

The AIR analysis shows that ethanol use in the Midwest increases from current levels of 3-4 billion gallons to nearly 10 billion gallons by 2022 in the “business as usual” RFS2 case. In the “enhanced” RFS2 case, ethanol use increases to about 12 billion gallons by 2022. Obviously, consuming these volumes of ethanol will require modifications to the Midwest’s refueling infrastructure. Specifically, a significant increase in blender pumps that allow FFV drivers to dispense varying combinations of ethanol and gasoline (typically E10, E20, E30, E40, and E85) is needed. Already, approximately 150 of these pumps exist in the Midwest. However, that represents far less than 1% of the gasoline pumps in the region. Because 25-30% of the Midwestern gasoline pool will likely be comprised of ethanol by 2022, rapid proliferation of blender pumps will be necessary. To dispense an average of E30-E40 into FFVs by 2022, blender pumps would need to comprise roughly half of refueling sites in the Midwest. According to the U.S. Census Bureau, the PADD2 region is home to 39,300 retail gasoline stations, meaning more than 19,000 retail stations likely would need to install blender pumps.

There are many ways state governments can encourage the installation of blender pumps. A recent example is a \$1 million program adopted in South Dakota that offers grants of up to \$10,000 per pump to help retail fuel dealers defray the cost of installing the blender pump equipment. Supporters of the program say it will help rapidly install up to 100 blender pumps at 49 retail fuel stations in 40 South Dakota communities. The South Dakota program serves as an excellent public-private blueprint for how states in the Midwest region can incent the rapid installation of blender pumps.

*Recommendations:*

- Support rapid development and deployment of blender pump infrastructure in the Midwest by initiating state and local incentive programs to assist retailers in defraying the cost of installing blender pumps.
- Support programs at the Federal level that encourage and incent the installation of blender pumps.
- Set a goal to install blender pumps in at least half of state retail gasoline outlets by 2022.
- Strive to ensure all newly installed retail gasoline pumps are flex-fuel capable (i.e., blender pumps).
- Support efforts to establish best management practices, specifications, safety standards and other technical guidance for the installation and use of blender pumps.

**Other Actions to Facilitate Implementation of RFS2 in the Midwest**

There are several other actions that state governments can undertake to support efficient implementation of the RFS2 program in their jurisdictions. Further, states can act independently to “enhance” the RFS2 in their jurisdictions and reap additional economic and environmental benefits as a result. It is our belief that without the support and active participation of state governments, the long-term benefits of the RFS2 program could be in jeopardy. In addition to efforts focused on increasing the production and use of FFVs and blender pumps, we offer the following recommendations aimed at effective implementation of the RFS2 program.

*Recommendations:*

- Support approval of E15 for use in all conventional vehicles. The U.S. Environmental Protection Agency is currently considering a Clean Air Act waiver request to allow the use of ethanol blends up to E15 in all conventional automobiles. Approval of E15 would greatly enhance the ability of gasoline blenders to meet their RFS2 obligations in the mid-term, and would reduce the burden on FFVs and blender pumps to consume and dispense increasing volumes of biofuels in the long-term.
- Support initiatives (e.g., grants, tax credits, forgivable loans) to encourage and incent technology improvements at current biorefineries that would reduce the carbon intensity of biofuels. While the current grain-based ethanol industry already offers significant GHG reduction benefits, there

is potential to further reduce the carbon intensity of existing processes. Examples include incenting the installation of equipment capable of processing biomass for thermal energy needs (i.e., biomass boilers), spurring the use of biomass feedstocks (e.g., corn kernel fiber, corn cobs, stover) for ethanol production, and encouraging other energy-saving technologies.

- Support coordination of state fuel regulations to allow for widespread and unencumbered use of E15 for conventional autos and other mid-level blends for FFVs.
- Encourage modification of existing permitting and safety listing protocols (e.g., Underwriters Laboratory) for fuel dispensing and storage equipment to allow efficient and timely transition to mid-level ethanol blends for FFVs.
- Support policy consistency by allowing all renewable fuels, regardless of feedstock, to qualify as “advanced biofuels” under the RFS2 based on their ability to meet the statutory 50% GHG reduction target and the “renewable biomass” definition.

### **Conclusion**

The recently promulgated RFS2 offers tremendous opportunities for diversifying the Midwest liquid fuels supply, fostering regional economic development, and reducing GHG emissions from the transportation sector. However, these goals may not be fully realized without the active participation and support of state and local governments in the region. If adopted, the recommendations contained herein would allow the Midwest region to take a strong leadership role in the securing successful implementation of the RFS2 program.