April 29, 2021

Attention: Docket ID No. RBS–21–Business–0010

U.S. Department of Agriculture
1400 Independence Avenue, SW
Washington, DC 20250

Re: Response to *Request for Information and Notice of Stakeholder Listening Session on a Rural Energy Pilot Program* (86 Fed. Reg. 16575; March 30, 2021)

Dear Docket Clerk:

The Renewable Fuels Association (RFA) appreciates the opportunity to submit these comments in response to the U.S. Department of Agriculture's (USDA) *Request for Information and Notice of Stakeholder Listening Session on a Rural Energy Pilot Program* (86 Fed. Reg. 16575; March 30, 2021). The pilot program was established in the Consolidated Appropriations Act, 2021 (Pub. L. 116–260) to provide financial assistance for rural communities to further develop renewable energy.

First organized in 1981, RFA serves as the prominent voice of advocacy for the renewable fuels industry. Its mission is to drive expanded demand for American-made renewable fuels and bioproducts worldwide. RFA's 300-plus members produce billions of gallons of renewable fuel and millions of tons of valuable co-products each year and are working to help America become cleaner, safer, more energy secure, and more economically vibrant.

Background

Ethanol is primarily used as a transportation fuel. It enhances the octane of gasoline while reducing greenhouse gas (GHG) emissions. The most recent research indicates that the "central best estimate" of corn-based ethanol's carbon intensity is 46% lower than that of gasoline.[1] Yet, it has the versatility to be a low-carbon source of energy beyond the liquid transportation fuel market. Specifically, ethanol has considerable potential for use in power generation, including in distributed energy systems.

The ability to use ethanol for power generation has already been shown outside the United States. A Brazilian facility equipped with General Electric gas turbines has

[1] Scully, M. J., Norris, G. A., Falconi, T. M. A., & MacIntosh, D. L. (2021). Carbon intensity of corn ethanol in the United States: state of the science. Environmental Research Letters. https://iopscience.iop.org/article/10.1088/1748-9326/abde08.

been operating on ethanol since 2010.[2] Tests conducted at that time indicated that nitrogen oxide (NOx) emissions were reduced by 30%. Another facility that uses ethanol began operations in 2019 on Reunion Island.[3]

Natural gas turbine power plants have traditionally used diesel as a backup fuel, but ethanol can be used instead. In addition to lowering GHG emissions, the use of ethanol would improve air quality and reduce water consumption. Capital expenditures and fuel costs would be comparable to or lower than diesel. The potential market as a backup fuel is several billion gallons.

Additionally, ethanol has the potential to complement other sources of renewable power. Wind and solar have become much more widely adopted, but an important issue is that they produce electricity intermittently. Natural gas-based power provides swing capacity when wind and solar generation dip. In some cases, it might be possible to generate supplementary power solely from ethanol, creating a fully renewable electricity supply.

There is a likely nexus with rural utilities, including electric cooperatives. Ethanol facilities are primarily located in rural communities, and they tend to have close relationships with local utilities since they use a significant amount of electricity.

It is also worth noting that ethanol could be used in combined heat and power (CHP) production at ethanol facilities. This would further reduce the carbon footprint of the ethanol they sell into the transportation fuel market.

Given that ethanol is a rural energy source with substantial potential for use by the power generation industry, this application should be considered by USDA as it establishes the structure and eligibility criteria for the Rural Energy Pilot Program (REPP). The RFA is pleased to respond to the following questions from the USDA's Request for Information that are particularly pertinent to this application.

2. What specific distributed energy technologies, innovations, and/or solutions are available or have the potential to advance environmental justice, racial equity, and economic opportunity through their deployment and/or development?

The use of ethanol as a backup fuel in place of diesel would reduce emissions of key criteria pollutants, notably including particulate matter (soot) and likely NOx. This would improve air quality in neighborhoods located near power plants. A 2017 study by University of Washington researchers estimated exposure to outdoor concentrations of nitrogen dioxide (NO_2) at the neighborhood level in 2000 and 2010, and it concluded that "if people of color had breathed the lower NO_2 levels experienced by whites in 2010, it would have prevented an estimated 5,000 premature deaths from heart disease among

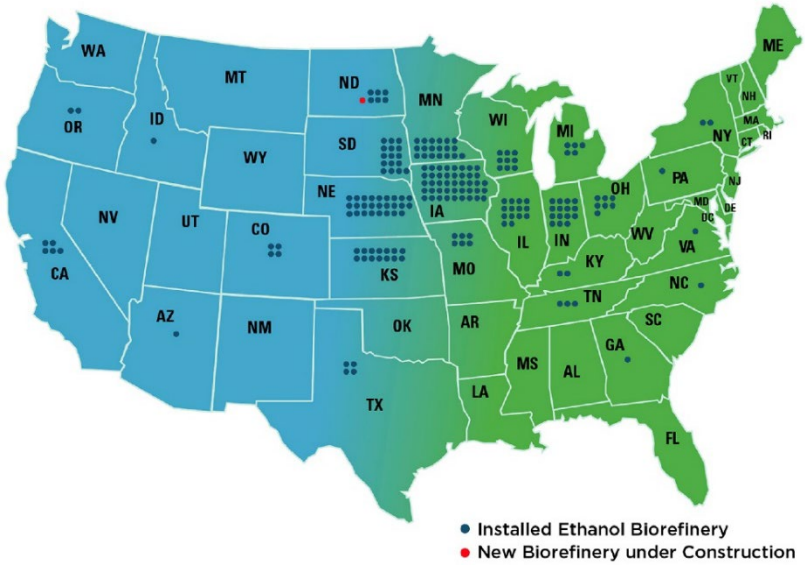
[2] Power Technology. (n.d.). *Ethanol power plant, Minas Gerais*. Retrieved April 27, 2021. https://www.power-technology.com/projects/ethanol-power-plant/.

[3] Albioma. (n.d.). *Saint-Pierre power plant*. Retrieved April 27, 2021. https://www.albioma.com/en/site/reunion-island/saint-pierre/.

the nonwhite group."[4] Power plants were noted as a source of emissions, along with vehicles and off-road equipment.

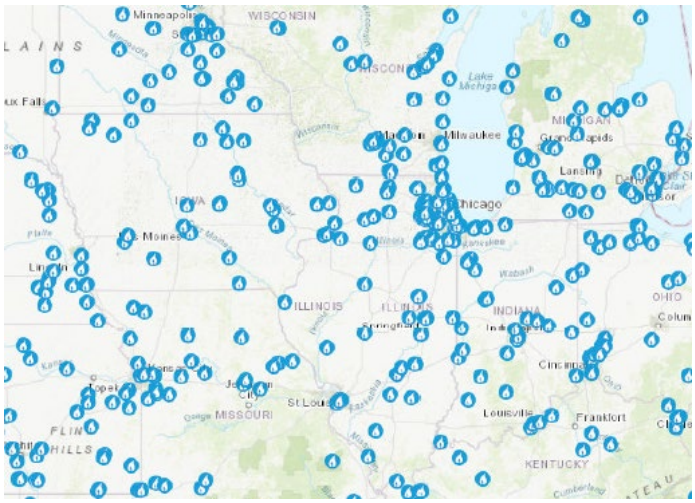
Natural gas power plants are ubiquitous across the country, including the Midwest, where ethanol production is centered (Exhibit 1). There are clusters of power plants around urban areas such as Chicago and Detroit, though there are facilities dispersed across rural areas as well (Exhibit 2). As a result, the ethanol industry is well-situated to supply fuel to the power generation industry, including plants located in or near disadvantaged neighborhoods.

Exhibit 1: U.S. Ethanol Biorefineries by State



Source: Renewable Fuels Association

Exhibit 2: Natural Gas Power Plant Locations in the Central U.S.



Source: EIA U.S. Energy Mapping System

[4] University of Washington. (2017). *People of color exposed to more pollution from cars, trucks, power plants during 10-year period.* https://www.washington.edu/news/2017/09/14/people-of-color-exposed-to-more-pollution-from-cars-trucks-power-plants-during-10-year-period/

Additionally, the ethanol industry supported nearly 350,000 jobs in 2019, more than two-thirds of which were in the agriculture sector.[5] Ethanol has a sizable multiplier effect, and the impact is felt particularly in rural communities. If the multi-billion-gallon potential market for ethanol in power generation is realized, economic opportunities in Rural America would expand significantly.

3. What type of assistance or incentive (made available through a Rural Energy Pilot Program) would encourage the development and deployment of such distributed energy technologies, innovations, and/or solutions?

The combustion of ethanol in liquid form has been shown to work, but the ability to utilize ethanol in pre-mixed, vaporized form needs to be tested. This would allow it to be used in a wider variety of facilities and would be expected to improve performance and lower emissions. In addition to the need to obtain permits to conduct such testing, the proper equipment would need to be acquired or upgraded, and personnel time would be involved in planning and performing the test.

Once testing has been done, the next step would be to demonstrate the commercial use of ethanol at a power plant, or at a small number of facilities. This would likely occur at a rural facility (e.g., owned by a public power system or rural electric co-ops), which would be consistent with REPP goals. It is also intended that the results would provide information applicable to potential use by distributed energy systems. Once the technology has been demonstrated, it could be rolled out across a broader range of power plants, including those close to disadvantaged populations. Any modifications to equipment (e.g., storage tanks) needed to conduct the demonstration project, along with the cost of the ethanol that is used and personnel time, should be eligible for funding under REPP.

5. Who should be eligible to receive such assistance?

Consistent with the response to question 3 above, the following entities should be eligible to receive assistance:

- Power plants and the utility companies that own them, including but not limited to public power systems and rural electric co-ops;
- Technology providers to power plants, including natural gas turbine manufacturers; and
- Ethanol facilities.

[5] ABF Economics, LLP. (2020). *Contribution of the Ethanol Industry to the Economy of the United States in 2019*. https://files.constantcontact.com/a8800d13601/9e769376-3aef-4699-b31f-3c6415b8fa63.pdf

6. What types of technology and/or infrastructure should be eligible under such a Rural Energy Pilot Program? a. Generation; b. Storage; c. Controller/smart grid.

REPP funding would be used primarily for power generation. However, it is possible that for a demonstration project at a power plant, some level of funding will be necessary to ensure that the storage tank is compatible with ethanol (or to utilize a temporary tank). Therefore, both generation and storage should be eligible under REPP.

10. If cost-sharing is required, what minimum level of cost-share (owner contribution) should be required of recipients of funding? What would you consider to be the most cost-effective level of cost-share while also supporting the objective of advancing environmental justice, racial equity, and economic opportunity?

It is recommended that the USDA require a cost share of 25% or less of total project expenses. The ethanol industry was severely affected by the pandemic, and production volumes have not returned to prior levels, so the industry's ability to fund research and development on new uses of ethanol is currently constrained. Additionally, it is very possible that the demonstration project will be conducted at a small, locally owned power plant that would not have the resources of a larger utility company.

13. Given the objective, how should USDA measure the outcomes of the Rural Energy Pilot Program?

The outcomes of REPP should be measured in terms of:

- The economic activity associated with the incremental volumes of ethanol used, with a focus on benefits to the agriculture sector and Rural America;
- The reduction in GHG emissions; and
- The impact on environmental justice, for which a potential metric is the number of people who live in communities (especially minority and poor communities) where air quality has improved as a result of the use of ethanol by nearby power plants.

It should be noted that the full impact on people, the environment and the economy would not have been experienced at the conclusion of REPP funding but rather would unfold over years. Therefore, it is recommended that a mechanism remain in place to monitor the outcomes over time.

16. From your perspective, how much post-award reporting is reasonable for recipients of funding?

It is reasonable to require an accounting of how REPP funds are spent, progress reports on the testing and demonstration of the technology, and a final report on the results and anticipated future application of the technology. However, the requirements should be streamlined so that potential applicants do not decide that reporting is so burdensome that they do not apply for REPP funds.

Conclusion

Despite the considerable potential for the use of ethanol in power generation, there is groundwork that needs to be done before adoption can take place in the U.S. This makes ethanol-based power generation a good fit with the Rural Energy Pilot Program, as proper funding can kickstart this potentially large new market.

Thank you again for the opportunity to submit these comments.

Sincerely,

Geoff Cooper
President & CEO