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Chairman Scott, Ranking Member Scott, and members of the Subcommittee, thank you for the opportunity to testify at today's hearing. My name is Mike McCloskey. Together with my partners, I milk over 15,000 cows in the great State of Indiana. Thanks to the many days I spent as a young boy accompanying my veterinarian uncle on farm visits, I learned to understand and appreciate the blessings that animals provide us. My love and fascination with animal agriculture culminated in a successful and respected dairy-centric veterinary practice in Southern California through the 1980s. Here, I partnered in my first dairy farm of 300 cows, and from there continued to grow while also founding the nation's sixth largest dairy cooperative, Select Milk Producers, and the dairy-based health and wellness brand, fairlife. I am also proud to serve as Chairman of the Environmental Issues Committee within the National Milk Producers Federation, which represents the nation's dairy farmers and the cooperatives they own.

In 2002 we installed our farm's first digester, processing both our cows' manure along with local pre-consumer food waste into electricity that we use on our farms. In 2009, we built a second digester with the purpose of creating a renewable biogas to be used in transportation. Through key partnerships with Cummins, Kenworth, and the State of Indiana, and with the majority of funding coming from private investment, we pioneered the first commercial fleet of 42 tractor trailers running on renewable compressed natural gas from biogas, hauling milk from our farms to processing facilities up to 350 miles away. Every year since beginning the operations from that digester, we have displaced 2,000,000 gallons of diesel from having to be mined as fossil fuel.

In 2019, as technology improved the cost and efficiency of anaerobic digesters, we

replaced our first electricity-providing digester. The concept of remains the same: microorganisms in the digester break down the waste, thereby producing methane and carbon dioxide. However, now we power a 1-megawatt generator. This digester operates around the clock and provides enough electricity to power about 900 homes. Our digesters are integral to our farm's environmental and economic sustainability because they allow us to take both animal and pre-consumer food waste and turn it into an array of value-added products. In addition to defraying our energy costs and allowing us to earn tipping fees for accepting food waste, the digester also outputs Grade A compost, bedding for cows, and renewable fertilizer that we use on our cropland to grow feed.

There are currently 254 digesters operating on livestock farms in the U.S., of which 204 are on dairy farms. When we installed our digester, there were significantly fewer in operation and far less shared knowledge about biogas generation among farmers, cooperatives, USDA, EPA, digester engineers, and energy companies to help get a digester project from concept to installation and profitability. In the interim, the dairy industry worked with USDA, DOE, and EPA to develop a Biogas Opportunities Roadmap, which has helped many more dairy farmers and the U.S dairy industry work toward meeting the voluntary goal of reducing greenhouse gas (GHG) emissions from fluid milk by 25 percent by 2020. Biogas production is also critical to the Net Zero Initiative, a new industry-wide initiative to help the U.S. dairy sector reach the goal of carbon neutrality by 2050 while also optimizing our water use and improving water quality. Biogas is part of a larger systems approach to sustaining dairy farms, and it must be incentivized along with improving soil health, 4R practices for feed production, animal care, precision feed management, and manure management.

Before going any further, I'd like to thank this committee for the work you've done to incentivize biogas production on farms while urging you to continue helping dairy producers of all sizes to generate biogas and improve their environmental and economic sustainability. The

Biogas Opportunities Roadmap estimates that over 8,000 potential livestock farms, of which 2,704 are dairy operations, could host a biogas system, producing 13.1 billion kWh per year, or enough to power 1,089,000 homes for a year. To meet this potential capacity, however, we must overcome a variety of financial and regulatory roadblocks. I will quickly outline the difficulties I encountered in installing my digesters as well as the challenges that persist for my fellow dairy farmers who want to install their own.

The primary impediment to on-farm digester adoption is the lack of financial incentives available to farmers. I strongly believe that once the proper incentives are in place, digesters will be adopted throughout the industry. It is the proper role of government to help facilitate early adoption to the point that economies of scale develop, technologies advance, and capital costs drop. Our industry has been significantly impacted by the uncertain farm economy (even before COVID-19), and digesters, which inherently entail long-term planning and significant capital costs, are simply out of reach for most farmers. Dairy farmers strive to be part of the solution to the climate and water quality challenges facing U.S. agriculture, but our voluntary efforts can only go so far without the continued support of Congress, USDA, DOE, and EPA.

For some reason, repurposing cow manure does not have the same shine as an array of solar panels or the grandeur of a wind farm on the horizon. USDA's own data show that from 2002-2019, the Department made 631 investments in anaerobic digestion worth $198 million, compared to 6,179 in solar worth $2.93 billion and 696 in wind worth $468 million.[1] USDA has provided more than 10 times as much in grants, loans, loan guarantees, and payments for solar production than it has for anaerobic digestion.

To illustrate this disparity more concretely, consider the USDA Rural Development's (RD) Rural Energy for America Program (REAP), which provides important loan guarantees

[1] https://www.usda.gov/energy/maps/report.htm

and grants for energy development. REAP has provided nearly $100 million to solar development, compared to only $36 million for anaerobic digestion. REAP prioritizes solar development over biogas by not properly accounting for anaerobic digestion's secondary benefits. Whereas anaerobic digestion provides several other environmental benefits – such as avoided methane emissions, mitigated odor and air pollution, and minimized nutrient loading – solar panels provide nothing other than clean energy. While wind and solar are important to the rural economy and America's energy transition, they do not offer a systems approach to agriculture's challenges the same way that anaerobic digestion does. And while the dairy sector is fully supportive of solar and wind development, biogas provides several additional income streams while addressing multiple resource concerns. It should be valued as such by USDA and other federal agencies with a renewed focus on promoting the technology.

USDA has made significant progress in implementing REAP to the benefit of anaerobic digestion by allowing stacking with the Environmental Quality Incentives Program (EQIP). In addition to the work on the Biogas Opportunities Roadmap, USDA's Natural Resource Conservation Service (NRCS) and RD came to an agreement allowing certain project costs to be covered by one program, with other costs covered by the other. However, in two of the top five dairy producing states, NRCS does not even offer the Anaerobic Digester (366) practice to producers through EQIP. This is just one example wherein producers would benefit from increased coordination among different agencies at different levels.

To achieve the goals of the Net Zero Initiative, dairy farmers will not be able to rely on federal funds alone. However, access to private capital to fund digesters has been limited. Federal funding, in the form of cost sharing, research investments, and loan guarantees will remain critical to the expansion of the nation's biogas capacity, but Congress can also help by creating an environment that facilitates private capital investments into biogas. For instance, the bipartisan Agriculture Environmental Stewardship Act (H.R. 3744), which was introduced last

year in both chambers of Congress, would create a 30 percent investment tax credit (ITC) for biogas used as renewable gas in vehicles or as renewable heat as well as for manure resource recovery technologies. The Section 48 production credit for biogas for electricity expired at the end of 2019, and there have never been production credits for biogas for fertilizer. This investment tax credit is just one way to incentivize the expansion of on-farm biogas capacity, and just one piece of the puzzle to helping U.S. dairy reach net zero.

Another way to encourage investment is to create certainty that a market for biogas will exist into the future. The first, and easiest, way to increase certainty around biogas returns is to encourage EPA to process the backlog of applications for the Electric Pathway under the Renewable Fuels Standard (RFS). Under the RFS, electricity produced with biogas is considered a renewable fuel when used for transportation purposes. Therefore, electricity used to power electric vehicles is eligible to generate and sell Renewable Identification Numbers (RINs) under the RFS. That is the essence of the RFS "electric pathway" and what have commonly been referred to as "eRINs." EPA finalized a rule for this pathway in 2014 but has processed no registrations to date. The electric pathway would allow agricultural digesters that are not near a natural gas pipeline to participate in the RFS by generating renewable electricity and putting those electrons onto the grid.

A simple illustration shows the potential value that activating the electric pathway could generate for a farmer who is considering an investment in an anaerobic digester to generate renewable energy. Assume a standard vehicle with an internal combustion engine is driven 25 miles per day and achieves 25 miles per gallon fuel efficiency. One gallon of gasoline consumed has the energy content of ~115,000 BTUs. A RIN has a defined value of 77,000 BTUs, so substituting an electric vehicle would displace that one gallon of gasoline and thus would qualify for ~1.5 RINs. The electric vehicle, driven the same 25 miles per day, would consume 8.5 kWh of electricity (equating to 0.34 kWh/mile). Using the current D3 (Cellulosic) RIN market pricing

of $1.58/RIN, the incremental revenue associated with the RIN would equate to $0.28/kWh (1.5 RINs * $1.58 = $2.37 / 8.5 kWh = $0.28). This incremental revenue would need to cover the administrative costs associated with reporting and verification of the eRINs, with the remaining value being split between the producer of the renewable energy (the farmer), the utility, and the electric vehicle supplier/consumer, depending on the project structure. A conservative estimate of 30 percent for administrative costs would result in ~$0.20/kWh net incremental benefit, which would be a sufficient incentive to attract additional investment in anaerobic digesters to produce renewable electricity.

A practical illustration of how an electric pathway could be administered is fairly straightforward. A clearinghouse entity could be established to receive electricity production data from a utility on the daily production of kWh of renewable energy from designated projects. Note this would be similar to the existing process used for reporting Renewable Energy Credits (RECs). The clearinghouse would also receive telemetric data from electric vehicle manufacturers detailing daily miles driven and kWh's consumed by each registered vehicle, identified by vehicle identification number. The clearinghouse would then use the two sets of data to calculate the equivalent quantity of RINs generated and submit the required information to EPA. Once the approved RINs are provided by EPA, the clearinghouse would sell the RINs to an obligated party and distribute the revenue according to the agreed-upon methodology. The clearinghouse would be responsible for ensuring that all reporting and verification requirements of EPA are satisfied.

Many digesters selling to the grid receive below-market rates for their electricity, and these payments alone cannot sustain the operation of a digester. To illustrate the potential impact of activating the electric pathway, assume 8,000,000 dairy cows could generate about 15 billion kWh's annually of renewable electricity. Assuming that all of this incremental electricity qualified under the electric pathway, the theoretical revenues from eRINs would provide about

$4 billion in annual incentives. It's important to note that the 15 billion kWh's would equate to less than 0.5 percent of the total U.S. electricity market and power only about 25 percent of the projected 18,700,000 electric vehicles[2] on the U.S. roads in 2030. Activating this electric pathway would serve as a market signal to producers, incentivizing them to expand biogas capacity. We appreciate the support that many in Congress, including on this committee, have provided to efforts to resolve this issue.

Digesters are expensive, and such a large investment means we are in it for the long haul. As I, and others, look to pass our farms along to the next generation, we need more certainty that the digesters we decide to install today will remain viable for years to come. As an industry, we have made the long-term commitment to continuously improve until we reach net zero, and we hope that you will join us on that path.

Biogas production is representative of the comprehensive systems approach we are taking on our farms to work toward a goal of net-zero emissions. A well-designed biogas system closes disconnected carbon and nutrient cycles on a dairy farm, all while offering producers an additional revenue stream. Manure is turned into electricity, bedding, fertilizer, and compost while methane and carbon emissions as well as nitrogen and phosphorus loading are reduced. The Net Zero Initiative is about each dairy farm – regardless of size, region, or production style – contributing what it can, where it can. No individual farm will be held to the Net Zero target, yet all will play a part. I, and my fellow dairy farmers, look forward to working with Congress, USDA, DOE, and EPA to further the environmental and economic sustainability of U.S. dairy.

In closing, thank you for the opportunity to testify here today. I am happy to answer any questions members of the committee may have.

[2] https://www.eei.org/resourcesandmedia/newsroom/Pages/Press Releases/EEI Celebrates 1 Million Electric Vehicles on U-S- Roads.aspx