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RENEWABLE ENERGY: GROWTH AND OPPORTUNITIES FOR OUR RURAL ECONOMIES

HEARING

BEFORE THE

SUBCOMMITTEE ON
RURAL DEVELOPMENT AND ENERGY

OF THE

COMMITTEE ON AGRICULTURE,
NUTRITION, AND FORESTRY

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C O N T E N T S

Tuesday, June 22, 2021

RENEWABLE ENERGY: GROWTH AND OPPORTUNITIES FOR OUR RURAL ECONOMIES

TUESDAY, JUNE 22, 2021

U.S. SENATE,
COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY,
SUBCOMMITTEE ON RURAL DEVELOPMENT AND ENERGY,
Washington, DC.

The Committee met, pursuant to notice, at 9:30 a.m., via Webex and in room 562, Dirksen Senate Office Building, Hon. Tina Smith, Chairwoman of the Subcommittee, presiding.

Present or submitting a statement: Senators Smith, Klobuchar, Bennet, Ernst, Grassley, Fischer, and Braun.

STATEMENT OF HON. TINA SMITH, U.S. SENATOR FROM THE STATE OF MINNESOTA, U.S. COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

Senator SMITH. I call this hearing of the Subcommittee on Rural Development and Energy to order.

I want to thank everyone for joining us today, in person as well as virtually. This hearing will be in a hybrid format. Witnesses will be appearing virtually and Senators will be appearing both in person and virtually.

First, I want to thank Senator Ernst for working with me on today's bipartisan hearing focusing on renewable energy and for our strong partnership on issues that shape the lives of people living in rural America, including economic development. I look forward to having Senator Ernst as a partner on this Subcommittee this Congress as we explore a number of important rural development issues.

Senator Ernst and I have worked together on issues to support rural farming communities like increasing access to conservation programs, creating more transparency in cattle markets, and helping hog farmers hit hard by the pandemic and we will continue our working relationship on this Subcommittee to highlight the great strengths of rural communities and the lessons that we can learn from leaders on the ground about how the Federal Government can be a good and a better partner.

I start from the perspective that small towns and rural places are entrepreneurial, diverse, wonderful places to work, live, and raise a family. They produce our food and our energy. They are hubs of manufacturing, small business, education, health care, arts, and culture.

When I travel to rural communities across Minnesota, I find hard-working, passionate people who love their communities and

are focused on making them even better. My hope for this Subcommittee is to highlight these contributions. The Rural Development and Energy Subcommittee should lift up and promote the local ideas that are helping communities thrive.

Some of the best opportunities and best ideas for building a strong rural economy are in clean energy. Renewable energy is rural energy. The clean energy transition is a cornerstone to building and sustaining economic vitality in rural communities. Renewable energy programs are already sparking economic growth across Minnesota and across the country.

Professor Shaobo Deng at the University of Minnesota Southern Research and Outreach Center in Waseca, Minnesota, for example, is partnering with Minnesota soybean growers to develop and promote a new plasma technology that has the potential to drastically reduce the energy consumption and cost of biodiesel production. His research is showing how we can use renewable wind and solar electricity to produce biofuels with a strikingly low carbon impact.

Biodiesel and ethanol are low carbon fuels and they get greener every year and become a more economic and viable alternative to fossil fuels. If we add carbon capture and storage facilities to our biodiesel production facilities, as is proposed in Iowa and Minnesota, we can drive the carbon footprint down even further and create more opportunity in rural America.

Cars and light trucks fueled by home-grown renewable energy and electricity and biofuels will literally drive the emission reductions that we need in the transportation sector. This is why we need a national low carbon fuel standard. We need to continue supporting R&D to develop biofuels as well, for ships and airplanes and long distance trucking, sectors that will not likely be electrified anytime soon.

We need new clean programs but we also need to get more from our existing efforts. The energy title of the Farm Bill incentivizes farmers to install renewable energy systems on their farms. This week, I will be introducing legislation to improve and increase funding for the REAP program, which is the flagship of the energy title. Programs like REAP should be in the climate and infrastructure package that we must pass this summer.

Rural America will benefit tremendously if we pass an investment also in a clean-based clean electricity standard as part of that same package. These strategies are all about creating jobs and economic opportunity in rural places and it takes a skilled work force to install these renewable energy systems and it takes training that work force at local technical colleges to ensure that those farmers can hire their neighbors to do the work.

Today we are joined by a panel of witnesses who will share their thoughts on how renewable energy can spur economic growth in rural areas. Today's testimony will inform all of us on the Subcommittee as we work to draft bipartisan infrastructure bills and as we consider climate resilient legislation.

It is important that rural voices are included in this policy discussion that comes before the Senate and this includes fostering renewable energies as a rural development economic driver.

It has been a pleasure to work with Senator Ernst in planning this hearing and I will now turn to her for any opening comments that she would like to make this morning.

STATEMENT OF HON. JONI ERNST, U.S. SENATOR FROM THE STATE OF IOWA, U.S. COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

Senator ERNST. Thank you, Chairwoman Smith and I am pleased to join you this morning for this hearing of the Senate Committee on Agriculture, Nutrition, and Forestry's Subcommittee on Rural Development and Energy.

Since the early 1900's, the Federal Government has administered various programs aiding communities in rural America. Today, the major agency tasked with carrying out the bulk of these programs is USDA's Office of Rural Development. Created under the 1990 Farm Bill, Rural Development's main function is administering grants, loans, and loan guarantees to support a number of services in rural communities including the construction and maintenance of telecommunications infrastructure, rural business development and retention, water and wastewater treatment facilities, and rural housing.

USDA Rural Development is also tasked with administering programs that support energy production, particularly renewable energy production throughout farm country. These programs have worked to support additional markets for our Nation's corn and soybean producers by funding the construction of advanced biofuels facilities. They assist rural businesses and farmers looking to expand renewable energy production or implement energy efficiency measures. These programs help finance the generation and distribution of reliable baseload electricity to power our rural communities.

Considering my upbringing in rural America and the critical role that Iowa plays in producing energy for the Nation, I am privileged to serve as ranking member of this Subcommittee.

Today, over half of Iowa's three million residents live in rural communities. Each year, I travel Iowa and do a tour of each of the State's 99 counties and 75 of them have a population of under 25,000.

Needless to say, strong rural economies are essential to a strong Iowa. In Iowa, our fertile soil and ideal growing conditions have empowered us to lead the country in production of pork, corn, and soybeans. We are also a national leader in renewable energy production. Iowa is proud to be the top ethanol and biodiesel producer in the country and the second largest producer of wind energy.

Iowa is also making significant strikes in the production of solar energy, and doing so in a way that ensures our rural communities will continue to have access to reliable, affordable electricity.

Iowa is also home to leading academic institutions offering programs to Iowans and students across the country looking to pursue careers in the installation and maintenance of renewable energy systems.

As we begin preliminary discussions about the 2023 Farm Bill, it is important we look at programs under our Subcommittee's jurisdiction to determine what is working and what may need im-

provement. We must continue exploring improvements in our programs to drive economic growth throughout rural America and that is why today's hearing is so timely and important.

Thank you again, Chairwoman Smith, for working with me to hold this hearing. I look forward to the testimony from our distinguished panel of witnesses.

I yield back.

Senator SMITH. Thank you so much, Senator Ernst.

We are now going to introduce our witnesses. I will introduce the first three and then Senator Ernst will introduce the next two. Then we will turn to each of the witnesses to make their opening statements.

I would like to start with Mr. Shannon Schlecht, who is Executive Director of the Agricultural Utilization Research Institute. Mr. Schlecht is responsible for the overall strategic and operational oversight of this organization's staff and programs, and also the execution of its mission.

Mr. Schlecht most recently served as the Vice President of Policy for U.S. Wheat Associates and has held numerous roles within the trade association during his 14 years with the organization. He has an extensive background in agriculture policy, market development, international trade, strategic planning, and management.

Mr. Schlecht will speak today about the importance of research and development to the rural, clean energy, and bioeconomy revolution.

Thank you for being here today, Shannon.

The Honorable Chair Katie Sieben was appointed as Commissioner of the Minnesota Public Utilities Commission in 2017. In 2019, was appointed as Chair by Governor Tim Walz.

Chair Sieben is an active member of the National Association of Regulatory Utility Commissioners and is the vice president of the Mid-American Regulatory Conference and is chair of the Nuclear Waste Strategy Coalition.

Chair Sieben previously served in the Minnesota Legislature for 14 years and was the Assistant Majority Leader of the State Senate.

I invited Chair Sieben to speak today because she can speak best to a Minnesota model for ensuring that rural renewable energy benefits workers and their communities. Thank you for being with us today, Chair Sieben.

Next, I would like to introduce Ms. Emily Skor. She is a St. Paul native. She joined Growth Energy as CEO in May 2016. Prior to joining Growth Energy, Emily served as Vice President of Communications for the Consumer Healthcare Products Association. At the Consumer Healthcare Products Association Ms. Skor led the industry's public affairs, strategic communications, and marketing. She has also served as Senior Vice President at a nationally recognized crisis management firm, where she led communications campaigns for Fortune 100 companies and industry trade groups.

Ms. Skor graduated Phi Beta Kappa from Wellesley College and she lives in Washington, DC. with her husband and two children. Thank you for being here today with us, Emily.

Now I recognize Senator Ernst who will make our final two introductions.

Senator ERNST. Thank you, Chairwoman Smith.

Today I am pleased to welcome our two Iowa witnesses.

First, is Mr. Bill Cherrier, the Executive Vice President and CEO of Central Iowa Power Cooperative or CIPCO. With 40 years of experience in the utility industry, Bill joined CIPCO in 2017 in the role he holds today.

Prior to CIPCO, Bill served as Chief Planning and Finance Officer for Colorado Springs Utilities but got his start in the energy space at IES Industries and Alliant Energy Generation, both located in Cedar Rapids. While at CIPCO, Bill has overseen a changing power generation landscape which has included adding efficient natural gas, wind, and solar to CIPCO's energy portfolio.

Bill earned his bachelor's degree in accounting from Loras College in Dubuque and he is a Certified Public Accountant. Bill currently lives in West Des Moines with Mary, his wife of 25 years, and he has three grown children and one grandchild, Mason. Bill, it is a pleasure to have you with us today.

Our next witness is the Dean of Industrial Technology at Iowa Western, Mr. Matt Mancuso. Matt first joined Iowa Western in 2010 and has held a number of roles, including sustainability coordinator and director of corporate training. In 2015, Matt transitioned to academic affairs where he now serves as the Dean of Industrial Technology.

Consisting of 16 academic programs, the Department of Industrial Technology is helping train Iowans and other students from across the country to pursue jobs in renewable industries, including the installation, maintenance, and repair of wind and solar energy systems.

Matt holds a master of science in urban policy analysis and management and a bachelor's degree from the University of Nebraska at Omaha. Matt, thank you for joining us today.

With that, Madame Chair, I will turn it back to you.

Senator SMITH. Thank you, Senator Ernst.

Again, I thank all of our witnesses for being with us today. As a reminder, we ask that you keep your testimony to about five minutes each. You may hear me tap the gavel should your time expire.

We will start with Mr. Schlecht. You are recognized for five minutes.

STATEMENT OF SHANNON SCHLECHT, EXECUTIVE DIRECTOR, AGRICULTURAL UTILIZATION RESEARCH INSTITUTE, CROOKSTON, MINNESOTA

Mr. SCHLECHT. Very good. Madame Chair, members of the Committee, thank you for the invitation to speak with you today about renewable energy and AURI's role in supporting the industry in Minnesota and surrounding States.

My name is Shannon Schlecht. I am the Executive Director of the Agricultural Utilization Research Institute. I have been with the organization for over five years now and I am constantly amazed at the ideation and the innovative spirit in the ag and food industry, especially in the State's rural areas.

The Minnesota Legislature created AURI in the late 1980's during the farm crisis and for over 30 years AURI has worked with producers, entrepreneurs, cooperatives, small and large ag and food

businesses to accelerate their ideas of new value-added opportunities and to bring those into the commercial market to benefit the ag and food industry.

AURI's role is as a trusted advisor. We provide business and technical assistance to commercialize ideas. We launch commercial public awareness initiative ideas around new opportunities. We convene and connect industry to accelerate new ideas. We provide access to laboratories, a resource that does not often exist in rural areas.

I am proud to say that our work to develop and de-risk opportunities has been reported by our clients to generate over $320 million in new ag and food sales each year, much of which benefits rural economies.

AURI focuses on four areas, biobased products, renewable energy, food, and coproducts. All of these areas undoubtedly have a positive impact on rural economies but biofuels production has undoubtedly had an outsized impact over the last couple decades.

AURI plays a key role in advancing the State's innovative philosophy around renewable energy. We have conducted a Renewable Energy Roundtable since 2006 to position Minnesota as a national leader in the space. We use this framework to generate awareness around new ideas and opportunities in the renewable space. In 2008, the State legislature even incorporated this framework into AURI's founding statute.

Biofuels companies, we know, are constantly exploring new innovations and looking for additional uses for their products. One cooperative has even taken a lookback, using grain fermentation to bring alcohols back to the marketplace while others are exploring biobased chemicals, higher protein DDGs, fiber and starch separation technologies, just to name a few.

Regarding ethanol, AURI named Chippewa Valley Ethanol Company as its Ag Innovator of the Year in 2017. This cooperative has continually displayed a culture of innovation. In addition to ethanol, it produces alcohol for food and beverage uses, pharmaceuticals, and industrial uses. We even worked with them on a gasification system to reduce their reliance on natural gas in the ethanol process.

AURI has provided technical assistance, as well, to biodiesel producers for many years. We work with them not just on the technical aspects of biodiesel but on evaluation of products such as glycerin and turning those ideas into new market opportunities.

Our work in partnerships across the renewable energy space is diverse and forward looking. AURI currently sits on the board of an innovation campus concept for Crookston, Minnesota that will include a small oilseed crush, laboratories, and ultimately serve as an incubationsite to spur new innovations focused on oilseeds and agricultural products including renewable energy.

Our mandate to utilize agricultural products and our innovative philosophy also has led to new leadership roles in recent years. For example, we recently created an industry collaboration to explore advancing a renewable natural gas industry in Minnesota. One project concept is to quantify the volume, location, and value of various organic feedstocks, along with existing infrastructure, to

help de-risk and move investment forward for new anaerobic digester systems.

Many farmers tell us that they do not have the expertise or the time to advance these types of concepts on their own but would be willing to participate in them.

Another area that we have partnered with the University of Minnesota is around potential uses for cash cover crops and perennial crops that can both improve soil health as well as meet market needs.

Our role is to identify commercial opportunities around items such as renewable fuels and then work with the value chain participants to bring these ideas to the marketplace.

Regarding the use of renewable biomass, we have worked with the University of Minnesota to better understand the holistic advantages to using biomass in heating systems for poultry barns. On the flip side, we have looked at using biomass to even cool buildings and looked at innovative cooling systems using biomass for commercial and industrial facilities.

We are also taking a collaborative approach to better understand how disruptive technologies like green ammonia and hydrogen can be an opportunity or a threat to the biofuels or agricultural industry. Asking questions such as what synergies exist with our biofuels producers? Is this an opportunity for a lower carbon biofuel production? Can farmers benefit from another farmer-owned business opportunity?

Providing Federal resources to help address challenges and opportunities in our new innovations will be key to the success and we appreciate your leadership and your forward-looking efforts around renewable energy and rural economies and the important role of agriculture in innovation.

Thank you for the time and opportunity to share perspectives today. Thank you, Madame Chair.

[The prepared statement of Mr. Schlecht can be found on page 28 in the appendix.]

Senator SMITH. Thank you so much.

We will now turn to Chair Sieben, who is recognized for five minutes.

STATEMENT OF THE HONORABLE KATIE SIEBEN, CHAIRWOMAN, MINNESOTA PUBLIC UTILITIES COMMISSION, ST. PAUL, MINNESOTA

Ms. SIEBEN. Chair Smith, Ranking Member Ernst, and members of the Subcommittee, good morning. I am Katie Sieben and it is an honor to testify today on behalf of the Minnesota Public Utilities Commission.

The Commission regulates our State's electric and natural gas providers and our mission is to create a regulatory structure that ensures reliable utility services at fair, reasonable rates that are consistent with Minnesota's telecommunications and energy policies.

We are economic regulators primarily, but increasingly, we are seeing and measuring the impact of clean energy and its transition on Greater Minnesota. Today, I would like to share several points about the importance of ensuring the benefits of clean energy reach

rural communities, and offer some insights into how we, as regulators, have played a role in this.

First, and importantly, low prices for electricity and natural gas are critically important for economic growth, whether that is in Fergus Falls, Hastings, or Mankato. We work hard to ensure a robust participatory permitting process so that developers and utilities can build needed generation to deliver reliable power.

As older generators reach the end of their useful lives and utilities either set their own emissions goals or are directed to by policymakers, new renewable energy is taking its place. In 2020, Minnesota built 588 megawatts of new generation capacity, and all of it was renewable, and all was located in rural communities.

The financial upside of this new generation is significant. Since 2004, wind energy production tax has generated over $133 million in revenue for Minnesota counties. There are counties in southern Minnesota that receive more than a quarter of their yearly budget in wind production tax revenues. There are also, of course, tens of millions of dollars of payments to landowners, many of whom are farmers that invest these payments in local communities.

Job creation is a critical component of the benefits of new generation. When the Commission began asking developers to report on the number of jobs created in large wind and solar construction projects, it signaled to the industry that the socioeconomic benefits of these expensive projects should flow to local workers, their families and rural communities.

Since we began reporting on the use of local labor—defined as people who live within 150 miles of the project—we have seen a significant shift in the percentage of local workers hired, from 20 to upwards of 70 percent. This has resulted in a better trained work force in many areas of the State and has encouraged the development of worker training programs that lead to new job pathways.

When the COVID pandemic hit last year, it led to a dramatic loss of clean energy jobs across the Minnesota and an estimated loss of 11,000 clean energy jobs in Minnesota alone. The Commission, knowing that the energy sector represents one-sixth of our State's economy, understood that it needed a boost. The Commission requested the acceleration of investment in clean-energy projects that would spur ecomomic development, lower rates, reduce emissions and importantly, create jobs. The utilities responded and the Commission has permitted clean energy projects that are helping to revitalize communities while keeping rates low. We have asked utilities to report on the number of direct and indirect jobs created, the reduction in emissions, and the use of women, minority and veteran owned businesses in their work force or contracting provisions. Here are two examples:

Xcel Energy is in the process of repowering six wind projects across Greater Minnesota. It will result in over 800 jobs, annual property tax revenue of roughly $4 million, and annual landowner payments of $6 million per year, all while saving ratepayers an estimated $160 million.

Second, the Duluth, Laskin and Sylvan Solar projects were approved for Minnesota Power. The company is building three solar facilities, totaling 21 megawatts of capacity, using highly skilled

labor, contracting with minority-owned businesses and using locally manufactured solar panels. Importantly, there was robust community support for these three solar projects.

Finally, I want to emphasize that transmission' investments are needed, desperately, across the Midwest and throughout the country. New transmission can maximize the value of low-cost, renewable energy and create living wage jobs that are essential to ensuring Americans have reliable power. Please include transmission investments in the American Jobs Plan or other relevant legislation.

Thank you for your time today and your leadership in supporting our rural communities as our energy systems are transforming. I am happy to answer questions you may have.

[The prepared statement of Ms. Sieben can be found on page 34 in the appendix.]

Senator SMITH. Thank you so much, Chair Sieben.

I will now turn to Ms. Skor, who is recognized for five minutes.

STATEMENT OF EMILY SKOR, CHIEF EXECUTIVE OFFICER, GROWTH ENERGY, WASHINGTON, D.C.

Ms. SKOR. Thank you, Chairwoman Smith, Ranking Member Ernst, and distinguished members of the Subcommittee.

I am pleased to speak to you today about biofuels vital role in addressing climate change and driving our rural economy.

My name is Emily Skor. I am the CEO of Growth Energy, our Nation's largest ethanol trade association. We represent over half of all U.S. ethanol production, including 92 producer plants and 91 innovative businesses that support biofuel production. 210 biorefineries across 27 States have the capacity to produce more than 17 billion gallons of ethanol, a low-carbon renewal liquid fuel. We are the second largest customer for U.S. corn growers, using roughly one-third of the corn crop to produce ethanol and coproducts such as high-protein animal feed and corn oil.

Biofuels like ethanol are critical to meeting carbon reduction goals today and well into the future. In fact, studies show there is no path to net zero emissions by 2050 without biofuels. EIA projects that gasoline or flex-fuel powered vehicles will make up about 80 percent of new vehicle sales in 2050, meaning the vast majority of the cars on the road will continue to be powered by liquid fuels for decades to come.

We know there is no one-size-fits-all path toward decarbonization, which is why biofuels remain essential in any effective transition away from fossil fuels. The environmental benefits are clear. Ethanol today reduces greenhouse gas emissions by 46 percent compared to traditional gasoline. Moving our Nation's standard fuel from E10 to E15, a 15 percent ethanol blend, will deliver substantial greenhouse gas emission reductions, the equivalent of removing nearly four million vehicles from the road each year.

The economic benefits of increased biofuel use are also clear. Our industry supports over 300,000 American jobs, many based in rural communities.

Today, Growth Energy is releasing a new study which shows that a nationwide move to E15 will add $17.8 billion to U.S. GDP, support more than 182,000 additional jobs, generate $10.5 billion

in new household income, and save consumers $12.2 billion in fuel costs. To capture these benefits, expanding market access to higher ethanol fuel blends is our top priority.

E15 is currently sold at nearly 2,500 sites in 30 States across the Nation. We expand that exponentially by making long-term infrastructure incentives available to fuel retailers. The BIP and HBIIP programs administered under Secretaries Vilsack and Perdue significantly expanded markets for higher ethanol blends. Any infrastructure package considered by Congress should buildupon these successes to further promote investment in low-carbon biofuels.

We strongly support efforts by those on this Subcommittee to provide such incentives for E15 and higher blends, particularly Senators Klobuchar and Ernst's Renewable Fuel Infrastructure Investment and Market Expansion Act. Growing the share of renewable biofuels in America's fuel supply is crucial to achieving zero emissions and promoting high paying clean energy jobs in rural America. To do this, we must have a strong RFS.

A recent news report stated that the Administration is contemplating RFS relief for refineries that refuse to blend biofuels. Not only would this undercut the growth of home-grown renewable energy, it would also backtrack on explicit promises President Biden made when he was a candidate. In 2019, President Biden said in Iowa, and I quote, "Those waivers are a gigantic mistake. We should not be exempting. We should be insisting that these major oil companies meet the criteria that is set."

We wholeheartedly agree that refiners should meet their blending obligations. Lowering, waiving, capping, or any backtracking on the promise of the RFS damages our ability to decarbonize our vehicle fleet, threatens large agricultural markets, and jeopardizes hundreds of thousands of good paying jobs supported by the biofuel industry.

Last, thank you for your tireless efforts in securing COVID relief for our producers through the USDA. This was welcomed news after weathering the most difficult year the industry has ever seen. As we await further direction on how funds will be distributed, we remain grateful for your advocacy efforts.

To close, biofuels ensure that we achieve our Nation's climate goals and strengthen our rural economy. Thank you, and I look forward to any questions you may have.

[The prepared statement of Ms. Skor can be found on page 37 in the appendix.]

Senator SMITH. Thank you so much.

We now turn to Mr. Cherrier, who is recognized for five minutes.

STATEMENT OF BILL CHERRIER, EXECUTIVE VICE PRESIDENT AND CEO, CENTRAL IOWA POWER COOPERATIVE, DES MOINES, IOWA

Mr. CHERRIER. Chairwoman Smith, Ranking Member Ernst, and distinguished members of the Senate Agriculture Committee, on behalf of Central Iowa Power Cooperative, thank you for the opportunity to testify on renewable energy efforts.

CIPCO is a not-for-profit generation and transmission electric cooperative providing electricity to 13 member cooperatives stretching 300 miles across Iowa and serving 58 counties.

Our sources of energy have significantly changed in the last decade. In 2010, power needs were primarily met through coal at 60 percent, nuclear at 30 percent. Wind was less than five percent. 2020's continued asset diversification caused a significant drop in coal usage to 21 percent, while wind grew to 32 percent. Our nuclear plant also ceased operations.

Our current portfolio consists of wind, solar, hydro, landfill gas, natural gas, and coal. 2021 projections show our renewable energy at over 40 percent. Many of the renewable energy credits with these projects have been sold into the renewable market.

By 2030, we project our portfolio to be over 60 percent wind and solar. However, intermittent resources like wind and solar cannot support the growing demand for power alone. Diverse generation capacity, including coal, natural gas, and nuclear is necessary to provide power—excuse me.

However, intermittent resources like wind and solar cannot provide the growing demand for power alone. Diverse capacity, including coal and natural gas, is necessary for power demand.

For this reason, CIPCO recently invested $85 million to add efficient natural gas engines to serve the higher energy demand. This enhances the addition of intermittent renewable resources while maintaining service reliability.

As renewable policy has continued in discussions, we must recognize the need for a realistic transition plan and time period for accounting for the regional differences and resource ability. It is important for policymakers to note that the current Federal tax-credit structure prevents electric cooperatives like CIPCO from taking advantage of tax benefits to directly build and own wind and solar assets. The current program requires cooperatives to work with third-party providers on long-term contracts to bring this energy into the market. The current incentive structure impedes our ability to adopt new technologies in a more cost-effective way. If Congress would recognize this and make existing tax credits direct-pay eligible for electric cooperatives, you would see an accelerated adoption of renewables among electric cooperatives as a result.

Most relevant to this Committee, is our interest in providing the Rural Utility Service with the ability to allow electric cooperatives across the country to refinance interest on existing RUS loans. CIPCO has partnered with RUS on project financing from the beginning with an RUS loan of $3 million in 1947. Over the last 30 years, RUS has supported CIPCO with more than $500 million in secured, long-term financing.

Passage of the Flexible Financing for Rural America Act will allow electric cooperatives to refinance the interest on existing RUS loans similar to commercial loans. Electric cooperatives would save over $10 billion in interest across the life of the loans. For CIPCO, that number would be more than $21 million. We value our relationship with the RUS, and an efficient system that understands and values the changing utility industry is important for continued success.

Also relevant to the jurisdiction is USDA's development of broadband programs which are essential to the rural communities we serve. The Rural Economic Development Loan and Grant pro-

gram is a key asset for rural growth. In 2020, CIPCO has secured $8.7 million for 10 projects to support rural businesses.

Additionally, the grant and loan programs provided an enhance broadband capabilities across rural areas and that is greatly appreciated. Nearly 200 electric cooperatives in 39 States are engaged in providing broadband where it makes sense. Our own member Maquoketa Valley Electric Cooperative has alone invested $65 million in rural broadband in four counties.

We appreciate the opportunity to visit with you with the electric industry and this Committee's work on ensuring programs are available to support the safety, reliability and cost-effectiveness of the system.

Thank you for your time today.

[The prepared statement of Mr. Cherrier can be found on page 52 in the appendix.]

Senator SMITH. Thank you so much, Mr. Cherrier.

We will now have an opportunity to hear from our last witness, Mr. Mancuso.

STATEMENT OF MATTHEW MANCUSO, DEAN, INDUSTRIAL TECHNOLOGY, IOWA WESTERN COMMUNITY COLLEGE, COUNCIL BLUFFS, IOWA

Mr. MANCUSO. Thank you, Chairwoman Smith, Ranking Member Ernst and the whole Senate Ag Committee for inviting Iowa Western to discuss the programming that we have here and the positive work force impact our graduates have on the economy.

The mission of the college is meeting educational needs and improving the quality of life through programs, partnerships, and communities. We believe this renewable energy is a premier programs that does that. Renewable energy is one of the fastest growing industries in our area and we believe that we at Iowa Western play an integral role in developing the educated work force to make that happen. I am excited to share the programming that we have today.

Just a little bit about Iowa Western, Iowa Western is the sole provider of higher education in Southwest Iowa. It serves several rural counties which equates to about 169,566 in population. The largest city is Council Bluffs, which is a part of the Omaha, Nebraska MSA. About two-thirds of our population is rural population. The renewable energy program helps serve those rural populations.

Iowa Western first offered its first renewable energy program in 2009. Since then it has been through two major redevelopments. This is obviously to stay current with work force needs and renewable energy is an ever-changing field, even for how young it is.

The current curriculum that we have, we believe is a premier program for renewable energy for our region. Iowa Western offers a renewable energy AAS degree, a wind turbine technician, and a solar install certificate. These programs work in alignment with each other to provide multiple pathway options for students in the renewable energy field. This purposeful alignment allows for students to enter and exit the work force and return for further education seamlessly. This flexibility is key to today's work force.

The renewable energy AAS degree is a mixture. The students get both the wind turbine technician training and they also get a solar installation training. They get both of them.

The wind turbine technician a two semester program. This is basically just the first year of the AAS degree. Students after that are able to climb and inspect the exterior and physical integrity of wind turbine. They also are able to do routine maintenance.

The Solar Certificate is only a six-hour credit program. This is a program that is also taken by electrical and HVAC students.

What I want to talk about in the work force area is that the solar is kind of feeding into other industries, and that is obviously a positive thing.

Wind technicians work force demand is really high. In Iowa, it is expected to grow by 26.9 percent by 2025. Students who are seeking jobs as wind technicians and graduates from the wind turbine technician diploma, or the AAS, are quickly hired. On a weekly basis, these notices come from companies for hiring opportunities.

The majority of the students in the career field of wind energy go back to rural Iowa to work. Other students start their careers in Iowa, South Dakota and Minnesota, and we find that a large majority of them do come back to their local communities that they grew up in. After a few years, many students have come back to where they originally are from.

Solar energy is relatively new for the Midwest and Iowa, but it is the largest growing. Its jobs have increased by 268 percent in the last decade in Iowa. Students graduating with the solar installation usually have to work as an electrician but also just recently, with the large commercial solar fields, these large construction companies who are building these are actually hiring our students at great rates. We get requests from them often, as well. We expect that to grow very much in the future.

In closing, Iowa Western is interested in continuing to support and enhance renewable energy in rural communities through our renewable energy program. Iowa Western is committed to the success of the renewable energy industry by preparing educated students to meet the work force demand of the day. These students are passionate about renewable energy and many are interested in living in local rural communities.

I thank you for everything you do for renewable energy in rural America and I look forward to your questions. Thank you.

[The prepared statement of Mr. Mancuso can be found on page 56 in the appendix.]

Senator SMITH. Thank you very much to all of our panelists and we will now begin a session of five minute questions amongst the members.

I will start with a question for Chair Sieben. Chair Sieben, can you talk to us about the need for collaboration and coordination between the Federal Government and local governments and on-the-ground experts as we really want to reach our clean energy goals? Can you particularly address how renewable electricity is benefiting Minnesota's rural communities and how Minnesota provides a model for ensuring that local workers are benefiting from this opportunity?

Ms. SIEBEN. Thank you for the question, Chair Smith. I am happy to try to answer that question.

In Minnesota, as I mentioned in my opening remarks, the legislature directed the Commission to look at the socioeconomic benefits of new sources of generation. The Commission has asked utilities to report on the number of local jobs that are created in new construction projects. We have seen in construction projects in Minnesota that occurred prior to this request for reporting, less than 20 percent of license plates of workers were from Minnesota. Now that the Commission is asking utilities to report on job creation quarterly, we are seeing renewable energy projects employ 60 to 70 percent of workers that live within a 150 mile radius.

As I said, just because we are asking these questions, the utilities, of course, are reporting on it. I think they are sensing the investment that comes when they build new renewable projects in rural Minnesota, that the community is more supportive of those projects because the tax benefits flow to the schools, to other local units of government, to farmers. It really, I think, is a model for asking these tough questions of utilities and developers to ensure that local communities see the benefit.

The second point that I would like to make is that although it is not required by statute in Minnesota to pay prevailing wages, if there are any efforts that the Congress can take to level the playing field so that all jobs that are created in rural communities around renewable energy pay a prevailing wage, that will benefit local communities and local families even more.

Senator SMITH. Thank you so much, Chair Sieben.

Ms. Skor, I would like to turn to you with a question. I really appreciated your comments about how biofuels and renewable electricity can work hand-in-hand. I wonder if you could talk to us a little bit about your perspective on how a Federal low-carbon fuel standard would allow biofuel-powered vehicles and electric vehicles to work together. How could these two strategies be synced up to benefit renewable fuels like we produce so expertly in Minnesota and Iowa?

Ms. SKOR. Thank you, Senator, and I appreciate the question and your support.

Many people agree that there is no path toward our clean energy future without using every tool in the toolbox. We are well aware that electric vehicles are an important solution and so are biofuels. It is important that we continue to recognize the innovation that is taking place in the biofuel industry. With respect to any forward-leaning carbon policy, most important is that you get the details right.

There are a lot of different ways that you can account for the life cycle of the ethanol industry. Many of them actually disadvantage the ethanol industry. Important for us is that you have modeling that reflects the most current science and reflects all of the innovation that is taking place not only at the plant but also on the field.

We would support the concept of a low-carbon fuel standard provided that you are technology neutral, provided that you do not have your thumb on the scale for one technology over the other. We need to evaluate all of the options on the table. All are going to be needed to deliver against our important progressive climate goals.

We look forward to being a constructive partner. We look forward to having constructive dialog in that regard. We know that we are going to be used, along with electrification and other technologies, to reduce our dependence on fossil fuels.

Senator SMITH. Thank you so much. I appreciate that answer and I agree with you completely on the need to be technology neutral. That is a feature of the clean electricity standard in another sector that I am working on. It seems to me that our strategy should be to sync up our renewable fuels efforts and the efforts to electrify transportation to maximize the job opportunities that we want to see in rural communities, as well as maximizing our goals around cutting greenhouse gas emissions.

Thank you so much and I turn now to Senator Ernst.

Senator ERNST. Great. Thank you, Madame Chair.

The first question will go to Mr. Cherrier. I came to the Senate just over six years ago, committed to cutting pork and working to remove unnecessary and burdensome regulations imposed on our farmers and rural economies and I remain absolutely committed to that cause.

Mr. Cherrier, in your testimony, you mentioned the important role renewables play in CIPCO's generation portfolio. You also mentioned that system reliability depends upon the ability to back up intermittent wind and solar power with firm, flexible, and dispatchable capacity like coal and natural gas.

Earlier this year, as part of the Biden administration's goal of achieving net zero emissions by 2050, current and former government officials released recommendations for how Federal agencies can achieve this goal. This included developing plans for retiring fossil fuel burning power plants.

Can you talk about the importance for ensuring that any plans to retire any baseload capacity needs to be done thoughtfully, through incentives, and not through overly burdensome regulation that could result in stranded assets and risk electric co-ops ability to continue providing reliable, affordable energy to rural communities across the country?

Mr. CHERRIER. Thank you, Senator Ernst.

I would like to say that we have made tremendous progress with the use of incentives and allowing the economics and reliability to drive the generation decisions. That has been critical for the utilities. We can see what the incentives have actually done, with CIPCO getting up to nearly 40 percent this year on renewables and we are already adding tremendous amounts of wind and solar in the next couple of years as a result of those incentives.

We do need gas, coal, and nuclear. We saw it earlier this year in the polar vortex when we had several States that were rolling blackouts and total blackouts when plants were not available. Diverse generation is critical.

CIPCO and in the Midwest and independent system operations, fossil plants really brought the power there that we needed, and did it economically. We saw gas prices go very, very high and all of the coal plants that were available were running. That is a critical element of this.

We have seen some of the comments on keeping it affordable. Using the transition with incentives is by far the best way to do

it, and allowing the utilities to actually make the economic and reliability decisions. We are already seeing fossil plants, many, many coal plants, being shuttered and closed simply because the economics are driving it. We are seeing a major transition in this country. The incentives, and we have seen the cost of renewables come down considerably but the incentives will drive it that much quicker.

Senator ERNST. Very good. Thank you so much.

Mr. Mancuso, partnerships are really important in rural America. Could you please talk generally about how wind developers in Iowa partner with farmers and other landowners on the siting of wind farms and how this can serve as an additional revenue source for our agriculture producers?

Mr. MANCUSO. Sure. Thank you, Senator Ernst.

Actually, in my written testimony, I mentioned around 2020 there was $30 million that were given to land leases for the wind turbines just in Iowa. Now that is supposed to grow to over $45 million in the next few years. These farmers can obviously have less financial stress. These farmers can then more efficiently farm their land.

What I mean by that is they can purchase new and more modern equipment and then, obviously, not have that financial burden because the land leases that those wind turbines have.

Obviously, right now it is a very precarious time for farmers and ranchers with the recent volatile markets and I know the individuals who have land leases for wind turbines have kind of weathered that storm a little better than let us say individuals who have not or farmers who have not.

Lease payments can be different in costs and the amounts that you receive, but even if you had four or five wind turbines on your land it would be very beneficial for a farmer.

Senator ERNST. Thank you, I appreciate that.

In one of my 99 county tours in Iowa, in Northwest Iowa, very sparsely populated, it was brought to my attention that the wind turbines on a number of these properties, actually the taxes drawn from those wind turbines enabled that very small rural school district to remain in place. That is one thing, as well. It is just one of those secondary and tertiary benefits of having these wind turbines in our most rural areas. A lot of our school districts face declining enrollment and the added benefit of those dollars in the community is very, very helpful.

Thank you to the witnesses. I appreciate it.

Senator SMITH. Thanks so much.

I believe next we have Senator Klobuchar, who is participating virtually, for five minutes of questioning.

Senator KLOBUCHAR. Thank you very much to my colleague, Senator Smith, for your leadership on this Subcommittee and also for having the wisdom to put so many Minnesotans on the panel.

I will start out with actually the environmental benefits of biofuels, which I think it is overlooked and misunderstood a lot. I will ask this of you, Ms. Skor, there was a recent study, of course, from Harvard—I consider that the University of Minnesota of the East—showing the environmental benefits. Senator Thune and I introduced a bill to direct the Agency to update its modeling stand-

ards to reflect the latest science, and they are supposed to be updated.

How would ensuring EPA is accurately accounting for the emissions from ethanol and biodiesel incentivize higher blends?

Ms. SKOR. Senator, thank you for the question and thank you for the bill. We hope that this bill does become law.

We have ethanol plants today who are producing cellulosic-advanced biofuels which have significantly higher greenhouse gas reduction above the standard 46 percent. They also bring additional value to the market, which also always comes back to the farmer.

However, these pathways are not approved because EPA is using not the right kind of modeling. It is very important when we look at how EPA evaluates any policy moving forward, whether it is the RFS or whether it is looking at future carbon policy. They have to use the most up-to-date science that is reflecting the innovations taking place in the plant and in the field, as well.

Senator KLOBUCHAR. Thank you.

That is why I was so disappointed with some of the recent reports that the Administration is considering, and we do not know if it is true, exempting oil refineries from the RFS obligations and lowering the amount of renewable fuel that must be blended. I recently led a letter with 14 leaders in Congress, urging them to reject those actions. Mr. Schlecht, can you briefly talk about the impact that exempting oil refiners from their RFS obligations would have in Minnesota and across the country?

Mr. SCHLECHT. Thank you, Senator Klobuchar.

The RFS is absolutely a critical standard for being highly impactful for supporting renewables, the renewable energy industry, as well as rural economies.

As I look at our work with ethanol companies and biodiesel companies around the State, the impact that it has on corn producers, as well as on the rural economies, is absolutely that vital infrastructure that provides them the means to look at new innovation opportunities to remain resilient as we continue going forward and look at adopting these new practices that meet new lower carbon needs for consumers that are being demanded in the marketplace.

It is an absolutely critical element. We highly support the RFS and our stakeholders, as well, and appreciate the question.

Senator KLOBUCHAR. Thank you.

Ms. Skor, just quickly, is there any evidence that oil refiners are suffering from economic hardship right now as a result of the RFS?

Ms. SKOR. Absolutely not. There is no correlation to the price of complying with the RFS in refinery profits. This is something that has been affirmed by many experts, including EPA, several times.

Senator KLOBUCHAR. One large barrier is the fact that we have got not enough biofuel infrastructure. There has been a lot of people trying to block that that want to stop biofuels from hitting the market in a big way.

Senator Ernst and I just introduced a bill to make permanent a USDA program that has been successful in expanding market access for biofuels by installing new blender pumps. I guess Ms. Skor or Mr. Schlecht, one of you, how can investments in biofuel infrastructure help?

Ms. SKOR. Senator, thank you for the bill. We absolutely support this. We have seen with previous programs of investment through USDA that those investments in infrastructure really help us have access to the markets. We need consumers to be able to access these low-carbon renewable fuels in all 50 States at every fueling station.

We know that retailers need the incentive, the infrastructure support. As we look, as Congress looks at investing in all types of clean energy, we have got to make sure that we are incentivizing the use of low-carbon biofuels.

Senator KLOBUCHAR. Thank you.

One last question to my friend, Ms. Sieben, out there. Whirlwind Energy, from your perspective in working with rural communities, how does expanding renewable energy generation capacity benefits to not just big entities but small farms, as well help?

Ms. SIEBEN. Thank you for the question, Senator Klobuchar.

As we have seen in Minnesota, renewable energy, especially wind projects, have created tremendous economic development opportunities for small communities. We are seeing the impact of increased hiring of local workers, which leads to more careers in the renewable energy sector. We are also seeing increased manufacturing domestically of wind turbines and solar panel components.

Combined with the tax benefits that come from renewable energy projects, it really is a holistic, helpful way to improve rural economies across Minnesota.

As I said earlier, though, what we really need in Minnesota especially is more transmission. As of January, there are 533 projects, renewable energy projects primarily, waiting to connect in the MISO queue, which total over 15 gigawatts of projects.

Once again, investment in transmission will really help our rural economies and connect these renewable energy projects.

Senator KLOBUCHAR. All right. Thank you very much. Again, thank you, Senator Smith, for this great hearing.

Senator SMITH. Thank you so much, Senator Klobuchar.

Next, we have Senator Fischer for five minutes of questioning.

Senator FISCHER. Thank you, Senator Smith. I appreciate this hearing today. I think it is extremely important.

Ms. Sieben, if I could have you followup a little bit on your comments to Senator Klobuchar about the transmission infrastructure. I actually recently read from or heard from constituents about a large renewable project in Nebraska that is in jeopardy of failing because of the antiquated transmission infrastructure in that area.

You have mentioned these projects do come with direct and indirect jobs, there is revenue boosts for the county and also the schools. We see reduced emissions. More importantly, we have a reliable energy source.

Could you expound a little more about the relationship that we see between these infrastructure projects with transmission lines and the renewable project development that we hope will be able to occur?

Ms. SIEBEN. Happy to, Senator Fischer and thank you for the question.

As many members know, America's transmission grid is generally outdated and rather inefficient to support a modern econ-

omy. Many of the Nation's transmission and distribution lines were constructed in the 1950's and 1960's and have surpassed their 50 year life expectancy.

We need to invest in transmission to bring these low-cost domestic sources of energy to consumers. It will help decrease bills overall. Any dollar invested in transmission is estimated to bring a $2 to $3 return on that investment.

Failure to invest in more transmission will prevent economic development, as you talked about, Senator. Really importantly, failure to invest in more transmission is making the Nation more vulnerable to grid outages and national security threats.

The need for transmission is really significant. It is estimated that renewable energy projects could be deployed at a rate two to three times more quickly if there was more transmission, especially in the Midwest but throughout the country.

Senator FISCHER. Thank you very much.

Mr. Cherrier, currently Nebraska is the only State where every single home and business gets its electricity from a consumer-owned not-for-profit utility. Nebraska has 121 municipalities, 30 public power districts, 10 electric cooperatives, and zero investor-owned utilities. We have a very unique system in the State of Nebraska.

I think it also needs to have special consideration in order for the systems that we have—so they can be included in Federal incentive programs. The Administration is focusing on clean energy, so how can we ensure that Federal incentive or assistance programs for clean energy work for business models outside of the investor-owned utility providers?

Mr. CHERRIER. Well, thank you, Senator.

I think the best way is really allowing the direct pay credits to be done. I think what you would find with changing to direct pay credits for both wind and solar would be a dramatic increase in renewable projects in Nebraska. Nebraska has great pride in being a public power State and with its cooperative and rural roots, and has done a phenomenal job of that.

Also, the ability to have the new transmission lines, that is probably one of the biggest drawbacks from reducing carbon footprints is the lack of transmission. We have hundreds of gigawatts of capacity in renewables that are awaiting new transmission that could be developed.

Senator FISCHER. Thank you.

Ms. Skor, I appreciated your comments about the EPA and being able to give industry and refineries more consistent direction on blending expectations. With all the see-sawing back and forth, it is really hard to have any kind of business model there and I think it is causing a lot of uncertainty for everyone.

Give me a 10 second answer on that to highlight why it is so important that we address that?

Ms. SKOR. You are absolutely right, Senator. We are at a critical point in the economic recovery of rural America. A big part of our future success not only to recover lost demand but to propel growth in our job opportunities moving forward is getting the RFS back on track.

Senator FISCHER. Thank you. Perfect. Thank you.

Thank you, Madame Chair.

Senator SMITH. Thank you so much, Senator Fischer.

Next, we will have five minutes of questions from Senator Bennet from Colorado.

Senator BENNET. Thank you, Madame Chair, and thanks for hosting this incredibly important hearing. I know people in Colorado are going to be extremely happy that you had it, so I appreciate it.

Mr. Cherrier, I appreciate you raising the importance of ensuring that electric cooperatives can access clean energy credits. As I am sure you know, from your time at Colorado Springs Utilities, the co-ops in Colorado are doing incredible work to transition to clean energy. I believe we should support them.

That is why I recently led an effort in the Finance Committee to secure an amendment to ensure electric co-ops, public power, and Tribal Governments have access to direct pay. Could you talk a little bit about how direct pay provisions would help accelerate our transition to clean energy and what specific clean energy projects you would be able to advance of Congress allowed co-ops to access direct pay?

Mr. CHERRIER. Thank you, Senator Bennet, and I appreciate you being a champion for this issue.

The direct pay credits will actually accelerate the projects that are probably already in planning for many of the utilities. It will reduce our cost by us being able to access those directly rather than using a tax-paying entity that is also taking profits and providing it to investors. We reinvest that money into the system.

It is really critical and you have some phenomenal utilities out there, Tri-State and other ones, that have invested tremendously. I think you will see a great acceleration because they will have more funds directly available to them to continue to do that and we will see these renewable projects actually accelerating as a result.

Senator BENNET. Thank you. I wanted to ask you another question.

You mentioned, in your testimony, the importance of affordable high-speed broadband. As you know, in Colorado, electric co-ops like the Delta-Montrose Electric Association are doing incredibly impressive work to provide fast and affordable broadband, I mean competitive with the rest of the world, to some of the most rural parts of our State. I drew heavily on their example to write the BRIDGE Act, a bipartisan broadband bill I introduced last week with Senator King and Senator Portman. Our bill would help to deploy future-proof networks that meet much higher standards for speed, latency, and reliability than what the Federal Government has typically accepted in the massive subsidies that we have historically given to large telecom carriers instead of investing in communities like Delta-Montrose and ones like you represent.

Could you expand on the mention of broadband in your testimony? What would fast gigabit speed broadband mean for our ability to transition to renewable energy in the 21st century grid?

Mr. CHERRIER. Well, I think you are actually seeing broadband as the issue that we saw for rural electric co-ops 100 years ago. It is absolutely critical for the lifeblood and economic development of

all our rural areas and being able to keep them up with the rest of the communities. They are behind on everything from health care, education, and everything else that they lack because of not having access to rural broadband.

We have seen efforts over the last year where people have struggled with educating at home and other things as a result of that. This would quickly accelerate and allow businesses to be more rural and remote and it would greatly improve the economics for those businesses, all your constituents in those areas, too.

Senator BENNET. Thank you for that testimony.

Mr. Mancuso, I want to thank you for mentioning the importance of work force development. That is another thing that we really need to focus on in rural America. I often think we are failing to prepare our kids to compete in the modern economy. Fortunately, that is not the case with wind energy in Colorado. Much like Iowa, we have a rapidly growing wind energy sector on the Eastern Plains.

Last summer, I had the opportunity to see it in action at Northeastern Junior College in Sterling, Colorado. Over a decade ago, the college had the foresight to create a wind energy technology program to train students for 21st century clean energy jobs. Today they are being hired into the high paying jobs even before they finish training.

I just wonder, Mr. Mancuso, if you could give the Committee a sense of what the next generation of high paying clean energy jobs are going to look like? Are they going to be related to wind and solar or to storage, to batteries, buildings, the grid which we have talked about this morning? If you could talk a little bit about that.

Mr. MANCUSO. Thank you, Senator.

To make easy, how I would answer that is all of the above is where we are going to see high paying jobs. The grid development is going to be very key. Once infrastructure is invested, or once we invest in our infrastructure, we will see those jobs take off.

Now one of the caveats is that I do not know of a lot of those programs that are out there right now for grid development, so we would have to—we, as in the college—would have to develop those programs. The solar, the wind, those programs are now and those renewable energies are growing. Those are going to be in the near future, those two for sure.

Senator BENNET. As I turn this back over to the Chair, I just want to say we have heard a lot of rhetoric in the last few months about the importance of investing quote "traditional" infrastructure. That, it seems to me, will completely ignore the needs of rural America, which desperately need us to invest in the 21st century grid, not 19th century infrastructure. I hope we can come together in a bipartisan way to build the infrastructure that our country will need in the 21st century.

Thank you, Madame Chair.

Senator SMITH. Thank you so much.

We turn now to Senator Braun.

Senator BRAUN. Thank you, Madame Chair.

My first question is for Mr. Cherrier. I come from a State that has got a real mix of different energy alternatives. It is a growing State for wind, a lot of solar going on. Of course, we have been

heavily dependent on coal over the years. Natural gas is up and coming.

One thing I have noticed in traveling through Indiana is that you will get into certain counties that actually have signs at the county line "No wind energy." I will not go over the reasons why, but you have got an adjacent county that has pushed it. You have got another county that does not want it.

I am a big believer that you have got to always defer to that local input. I would like your opinion on just how it is playing out in Indiana and that urge, many times, for us to do things from afar to where we put our guidelines and policies in place, especially from here to the States. Sometimes State governments can be overbearing into their own counties.

What is our kind of viewpoint on how that should work? How do you see it trending when you observe across the country?

Mr. CHERRIER. Well, local control is absolutely critical to the development renewables in rural areas. What we have seen is that, as we have seen in Indiana, many rural areas are setting up signs to debate what type of power. We have seen it for solar. We have seen it for wind now.

I think the critical thing is to have a uniform set of processes that allows the landowners that want to be able to provide this, use this, and develop—whether it is wind or solar—it is absolutely critical to them. Also being respectful of joint landowners.

I think having a uniform set of rules throughout the State is pretty critical because on a county-by-county basis it makes it very difficult to develop these projects that way.

Senator BRAUN. Clarify, in terms of any input from the Federal Government that would weigh in in some type of way to homogenize the process, is that workable at all?

Mr. CHERRIER. I believe it is. I think the Federal Government can provide various incentives within the State and local levels to help provide and streamline these processes. I think it ought to be much encouraged.

I think here in Iowa, we have had considerable wind development and we have had some resistance in certain counties where they have set up rules to slow down the development. They are looking for uniform processes. Being respectful of landowners or adjacent landowners when these are being developed is pretty key.

Senator BRAUN. Well, I would hope that that uniformity never comes from here and that it is within the domicile and prerogative of the State.

My next question is for Mr. Mancuso.

Senator Bennet earlier talked about work force development. Indiana is the biggest manufacturing State per capita in the country. Wisconsin is very close. For my observation, in running a business for 37 years prior to being here, there has been an issue not only with State departments of education but especially high schools for not promoting or at least offering those options in terms of high demand, high wage jobs that most of us need. A State like Indiana, I think, ships out twice as many four-year degrees as we keep in-State.

What is your observation in terms of what you are seeing at the grass roots level? Are high schools getting back to teaching these

critical life skills, and especially pushing career and technical education pathways and minimally not stigmatizing that as an option?

Mr. MANCUSO. Yes, thank you for the question, Senator.

I would say yes, high schools are moving back to the career and technical programming that they have missed over the last few decades in the high schools. A lot of times now, at least in Iowa and our neighboring State of Nebraska is what they are doing. They are partnering with community colleges either to concurrent enrollment or to sharing lab space to give those students those career and technical classes that they were missing before.

A lot of our schools are rural so we have four rural centers that students are able to attend and get those career and technical classes. High schools are slowly and surely moving toward that.

I will point out that Iowa is the No. 1 State for concurrent enrollment for high schools and high school students. We do have a large number of students in our centers each day from high schools going through a multitude of programs, both arts and sciences, transfer courses, and now—moreso in the last five years—the career and technical.

Senator BRAUN. Well, that is good to see and I think that right mix of making sure—especially for parents, probably the main stakeholders in the whole journey, along with their kids. We need to make sure that we are not misguiding, that we are not stigmatizing, and that we give the full range of options and then put it into practice.

Thank you so much.

Mr. MANCUSO. Thank you.

Senator SMITH. Thank you, Senator Braun.

Senator Ernst, I think we have time—I think all of our Senators who had wanted to ask questions have had a chance to ask questions. I think we could do a quick second round and try to wrap up in about 15 minutes or so.

Let me just start that second round. I would like to start with Mr. Schlecht from AURI.

Shannon, AURI, I think, brings a relentless focus on value-add for agricultural products, especially renewables as a way of creating opportunity in rural places. Could you just discuss with briefly how Congress can better incentivize value-add programs that help farmers in rural places, especially in renewables but across the board?

Mr. SCHLECHT. Thank you, Senator, for the question.

AURI is fully focused on value-added agriculture and what we can do to advance post-harvest opportunities for our crops, whether they be corn, soybeans and across the livestock sector. I think what we have seen as a roadmap for ethanol and biodiesel has been a huge success in terms of how we think about policies and incentives for renewable energy and advancement in the value-added agriculture sector.

Looking at that financial incentive and providing that structure and framework, that provides a marketplace that then incents more clean energy investment, gets investors to engage. Then the wealth just begins to flow into our rural economies as we see that consistent approach, which is the importance of the integrity of the

RFS for our current situation as well as looking at new energy opportunities.

Of course, infrastructure, which we have talked about as well through some questions is another critical piece of advancing value-added agricultural opportunities and incentivizing that infrastructure investment and bringing parties together to solve some of those challenges and create jobs and opportunities for rural America.

We think a consistent yet flexible approach in some manner is required in terms of timelines to implement some of these opportunities, as well as the ability to work with a broad swath of value-added participants from producers to cooperatives to rural businesses and how we can work with each of them where they bring the most value to the value-added opportunity, again to really get that into the marketplace, start creating wealth for our producers and for the rural economies.

Senator SMITH. Thank you so much.

I have learned a lot from AURI about how, when you bring that kind of focus, and when you are also looking at the opportunities for value-add from byproducts of processing like ethanol, for example, you can just continue to maximize economic benefit.

Mr. Cherrier, I wanted to thank you for mentioning my bipartisan bill with Senator Hoeven, the Flexible Financing for Rural America Act. I really appreciate your support and NRECA's support of that legislation. We have had a chance to hear about the importance of this and also the importance of direct pay.

I want to just give you an opportunity to give us any further direction about what we need to be considering as we think about—as Senator Fischer pointed out—the municipal, the munis, no-profit munis and co-ops who are in a completely different environment than the large investor-owned utilities.

Mr. CHERRIER. Thank you, Senator. The Flexible Financing for Rural America program is absolutely critical to allowing low-cost expansion with the rural electric co-op. The program allows us to refinance at current low interest rates the same way the investor-owns can do a refinancing at any given time, depending on what rates they are seeing. It puts us in a more competitive position and allows us to do our mission more successfully.

It is always good to keep in mind that we are a non-profit. Whatever we save in there goes back into the system, goes back into new generation, transmission, and so on.

As far as the direct pay credits, we really anticipate that to be something that we can now develop the wind and solar projects on our own more cost effectively than we can with a taxable partner being involved in the mix. I think we can do more sooner and on a greater scale than we otherwise would be able to.

Senator SMITH. Thank you very much.

I will turn to Senator Ernst for any additional questions you have and any closing comments you would like to make.

Senator ERNST. Thank you.

I just have one final question. Mr. Cherrier, as you had noted in your testimony, RUS has been an important partner to CIPCO over the many decades. As we continue to exercise oversight of USDA, but also as we begin discussions about what the next farm bill will

look like, can you talk a little bit more about which programs under USDA Rural Development you believe are the most effective? Which ones might need improvements as we work to advance different programs that are supporting our rural economic development while also being good stewards of our taxpayer dollars?

Mr. CHERRIER. Senator Ernst, first of all, thank you for being such a supporter of rural development. It has been critical to our success. The RUS electric program is at the foundation of everything we do. A strong RUS makes for a much more efficient system, keeps us well funded.

I think the areas that we can look at are continued support of the REDLAG program, the Rural Economic Development Loan and Grant Program. We have seen tremendous success there, and I think continuing on with that program will be greatly supporting rural development of business.

The other one that we had talked about somewhat on here is broadband in rural America. It is really critical to remote health care, agriculture, development and use of high-speed broadband for new ways of doing agriculture and education are all absolutely critical that we have broadband throughout the country that is accessible. We have seen new maps that really show how unaccessible it is today.

Senator ERNST. Thank you so much.

I would like to thank all of our witnesses for being here today and sharing information that is so important to all of us that reside and work in rural America.

Chairwoman Smith, thank you so much for the opportunity to share some thoughts about rural development today.

Senator SMITH. Thank you so much.

I want to thank all of our witnesses for providing your perspective today. I also want to thank Senator Ernst for your partnership in planning the hearing today. I look forward to continuing this work on future Rural Development and Energy Subcommittee hearings with you and the work that we can do together.

I note, as I think about the testimony that we heard today, the strong bipartisan threads across a range of issues but really all reinforcing this integral connection between renewables and the strength of rural economies. We had a strong discussion around the importance of infrastructure from transmission to broadband to blender pumps; the importance of flexibility particular for co-ops and munis and the value of incentives to drive the change that we are looking for and the opportunity that we are creating; the importance of job training, which is going to be so important, and keeping those job opportunities local.

Also, I appreciate all of the comments about highlighting the importance of the RFS and the continued challenges around refinery waivers and limiting those.

Then last of all, the importance of listening to local leaders and following local leadership in all ways.

The record for this morning's hearing will remain open for five business days for members to submit additional questions or statements.

With that, this hearing is adjourned.

[Whereupon, at 10:55 a.m., the Subcommittee was adjourned.]

A P P E N D I X

JUNE 22, 2021

Statement of Shannon Schlecht

Executive Director of the Agricultural Research Utilization Institute (AURI)

Crookston, MN

Senate Agriculture Subcommittee

Subcommittee on Energy and Rural Development

Renewable Energy Growth and Opportunities in Rural America

June 22, 2021

Thank you for the invitation to speak about Minnesota's renewable energy and the Agricultural Utilization Research Institute's (AURI) role in supporting the industry in Minnesota and the surrounding states. From transportation fuels to heating to electricity, AURI is working on ways to keep ag-based bioenergy as a strong contributor to the state's economy. We strongly believe in the importance of fostering the renewable energy sector to create new revenue streams and jobs for rural economies. Supporters of the industry need to play an active role in determining its future.

My name is Shannon Schlecht. I am the executive director of AURI which is based in greater Minnesota. I have been with the organization for over five years and am amazed at the ideation and innovative spirit in the food and agricultural industry, especially in the state's rural areas. I grew up on a grain and cattle farm in southeast North Dakota and prior to AURI spent nearly 15 years with U.S. Wheat Associates working on behalf of producers to promote U.S. grown wheat around the world.

AURI is a unique organization that accelerates economic development, through its technical assistance, business development, as well as its convening and connecting role to spur greater utilization of commodities and agricultural products.

AURI is governed by a board of directors made up of representatives of the state's commodity groups, currently wheat, soybeans and beef industries are represented, both general farm organizations, the Minnesota Farmers Union and Minnesota Farm Bureau, agribusiness and members of the Minnesota House and Senate Agriculture committees.

AURI was created by the Minnesota Legislature in the late 1980s during the farm crisis in hopes of mitigating its effects on farmers throughout the state. Over these 30 years, AURI has worked with producers, small businesses, cooperatives, as well as small and large ag and food manufacturers to

advance innovations to benefit the local and regional economies along with the agriculture and food sectors.

We focus on developing impactful outcomes for rural economies and business which includes home-grown fuels. Between FY16 and FY20, AURI clients reported the following impacts to the economy:

- an estimated new annual gross sales figure of $322 million
- new capital investment of $128 million
- 606 new or retained jobs

I am proud to say that the work we have conducted in recent years with food and agricultural businesses to help develop new opportunity areas and de-risk innovative ideas has been reported by them to generate over $320 million in new ag and food sales each year (an over 80 to 1 return on the state's investment in AURI), much of which occurs in rural areas. Notably, roughly 70 percent of AURI's client project work today occurs in rural areas.

AURI focuses on the post-harvest side of the value-chain – exploring new uses – from harvested grains to livestock processing. During the last fiscal year, AURI worked on more than 180 projects to advance its mission of creating economic benefit through value-added agricultural products.

AURI provides food and ag businesses with one-on-one technical assistance to commercialize ideas, conducts public initiatives to create awareness around new opportunities, such as our "Creating an Industrial Hemp Industry" framework, convenes and connects industry and stakeholders to accelerate ideas, and provides access to its rural laboratories to entities for the purpose of accessing equipment and bench space for proof of concept testing, a resource that doesn't often exist in rural locations.

AURI focuses on four areas – renewable energy, food, coproducts, and biobased products. All of these areas drive opportunities for rural economies, but biofuels production has undoubtedly had an outsized impact over the last couple decades.

AURI has a biobased and renewable fuels laboratory at its Marshall, Minnesota location on the campus of Southwest Minnesota State University to do small scale trials and support bench-top applied research and development for companies exploring new opportunities.

Fostering the renewable energy sector, including biofuels production in rural areas, and creating revenue streams from the clean energy transition to help improve rural economies.

Maintaining the integrity of the Renewable Fuels Standard is of utmost importance to our industry partners, the ethanol and biodiesel producers. That stability provides the necessary floor to develop new products and new processes.

AURI has conducted an annual Renewable Energy Roundtable since September 2006 to bring together renewable energy industry leaders and businesses to explore new concepts and accelerate collaborations to benefit the industry. Through this framework, AURI has worked with numerous

ethanol and biodiesel businesses. AURI's role is as a trusted third-party technical assistant and business development advisor on innovative ideas in this renewable energy focus area.

AURI has supported multiple approaches in renewable energy and market development for renewable energy products and coproducts from feedstock commodities such as soybeans and corn. However, AURI's renewable energy work goes beyond ethanol and biodiesel, including efforts to advance renewable natural gas opportunities and the utilization of biomass from agricultural residues as a renewable energy source.

One partnership example that stands out to advance rural economic opportunities is Chippewa Valley Ethanol Company (CVEC). In 2017, CVEC was named AURI's Ag Innovator of the Year for its innovative approach and contribution to the rural economy. The partnership between our organizations has been ongoing for nearly 20 years and its forward-looking approach for over 975 cooperative owners is notable.

While it produces more than 50 million gallons of ethanol each year and DDGS byproducts in Benson, Minnesota, it also has diversified into other opportunities including industrial alcohol for personal care products, hand sanitizer, beverage alcohol for organic spirits through its Glacial Grain Spirits enterprise, organic protein products, biodiesel from corn oil, and other industrial and pharmaceutical application areas. Additionally, it is involved in a gasification technology company headquartered in Ames, Iowa.

One unique project AURI worked with CVEC on many years ago was a gasification system to reduce reliance on natural gas and utilize locally produced biomass to produce an alternative renewable fuel. The system was a success from a technical feasibility standpoint, but low-priced natural gas shortly after implementation impacted its economic feasibility.

AURI has worked with the biodiesel industry and companies to help solve technical challenges, identify value stream options for coproducts and assist in new technology development. AURI is also a member of the Minnesota Biodiesel Task Force, which advises the Minnesota Department of Agriculture on methods to increase the production and use of biodiesel in Minnesota.

AURI has regularly provided technical input to companies as they started or expanded their business to troubleshoot operations to advance their business. Most recently, AURI assisted Epitome Energy with feasibility efforts to construct a new oilseed crush plant and biodiesel facility in rural Minnesota.

Another interest area in the biodiesel sector is the Plasma Blue technology. Although AURI has not been heavily involved in Plasma Blue's efforts, it is exciting to see innovative lower cost catalyst technologies advance that could provide a new competitive method for biodiesel production.

Additionally, AURI has been involved in numerous projects that utilize the glycerin byproduct from biodiesel production in applications to advance its value and help make these rural biodiesel businesses more profitable.

One forward looking area that AURI is engaged in today around biofuels is to develop new uses for cash cover crops, such as pennycress, camelina, perennial flax, etc.

This partnership with the University of Minnesota Forever Green Partnership and other regional players is exploring both food uses and industrial uses, such as for renewable energy, to advance win-win opportunities. The objectives are for cover crops to improve soil health, protect water, and benefit wildlife, while also creating another revenue stream for farmers and rural businesses to add value to these crops through products like biodiesel. Being able to add a win-win solution like this for producers and rural businesses would be a huge boost to rural economies.

AURI is also actively engaged in the Ag Innovation Campus effort, which will be constructed in Crookston, Minnesota. The site would include an oilseed crush operation and serve as an incubation site to spur new innovations focused on current and new oilseeds and agricultural products, which will undoubtedly include exploring innovative renewable fuel technologies and applications.

Utilizing biomass for renewable energy is another area AURI works to advance.

For example, AURI worked with the University of Minnesota's Clean Energy Resource Team to investigate burning woody biomass versus liquid propane to heat poultry barns. The study explored not just energy costs, but profitability from a holistic standpoint of bird health, weight gain, flock growth, mortality, and other factors that affect the bottom line of poultry producers.

AURI has also collaborated with Koda Energy LLC in Shakopee, Minnesota, to showcase its renewable biomass system for heat and energy that utilizes agricultural residues in its operations.

Another innovative study conducted in recent years explored utilizing biomass for cooling systems. While we often think of biomass for heating, technologies and systems exist today to use biomass year-round in facilities and this study explored the viability of these combined systems.

This study was done in partnership with the University of Minnesota – Center for Urban and Regional Affairs, University of Minnesota, the Northwest Regional Sustainable Development Partnership, Western Illinois University – Illinois Institute for Rural Affairs, Northwest Minnesota Multi-County Housing and Redevelopment Authority, Greater Minnesota Management, the former Northwest Manufacturing, Inc. / WoodMaster, Pinecrest Medical Care Facility in Michigan, and Heating the Midwest Biomass Resources and Demographics Action Team.

Further, AURI has actively participated in the Heating the Midwest Initiative since 2011 to support and expand opportunities in promoting the use and adoption of biomass fueled heat and energy systems in the Midwest region of the United States.

Among other biomass-related initiatives, AURI most recently partnered with Heating the Midwest, Inc., the Michigan Department of Natural Resources, the Wisconsin Department of Natural Resources, and the Minnesota Department of Natural Resources to repurpose an internet marketplace with a focus on biomass for fuel to connect buyers and sellers of woody and agricultural biomass in the Midwestern area of the United States and Canada. The Midwest Biomass Exchange (MBioEX) database provides a platform to more easily explore available resources within a specific area for conducting feasibilities, finding suppliers or buyers, etc. which can further develop business interactions between companies.

Minnesota's renewable energy future is full of opportunity.

New opportunities are being examined across the region for their financial and logistical viability as well as for their sustainability footprints. AURI's Renewable Energy Team spent FY20 making a strategic commitment to expand efforts in renewable natural gas using anaerobic digestion, as well as exploring green ammonia and hydrogen opportunities.

The team worked on two unique projects and initiatives to advance the new programming focus. Both were newly initiated with a coalition working group.

AURI implemented a new industry thought leader initiative to support and foster the development of anaerobic digestion systems in the state. These systems allow producers of organic waste sources to divert them away from landfills and convert them into renewable energy. The resulting biogas can replace fossil fuel derived natural gas when burned or added to an existing natural gas pipeline.

The new industry thought leader group aims to identify potential anerobic digestion projects in the state and connect them with resources. One new way to accomplish this is by developing a digital project decision tool that will aid project teams, policy makers and others with a GIS based techno-economic tool for evaluating a catalogue of waste streams, economic data, physiochemical data, supporting infrastructure and existing sites around the state. The project goal is to assist and accelerate the timeline for those working towards establishing new anaerobic digestor production sites and processing capacity for biogas.

Collaborative systems exist successfully in the state already and being able to link smaller agricultural producers with a municipality or agricultural processing facility to create a consistent feedstock to justify this type of system is a goal of this effort. Ideally, this collaborative approach will allow smaller livestock farmers to participate in this opportunity area without having to own and operate digestors. This collective approach could include agricultural processing residue streams, municipal waste, and livestock products, to provide a greater volume and more consistent feedstock supply to help create the critical mass to justify the investment in generating electricity or injecting biogas into a natural gas pipeline.

A flexible approach in anaerobic digestion policies and incentives that allows for producer participation versus ownership in these types of systems could create additional renewable gas opportunities for livestock producers and rural communities. One could even envision rural communities utilizing this renewable gas locally to power a small city fleet of cars, pickups, or trucks.

AURI also houses a portable anaerobic digestor semi-trailer to conduct beyond bench scale analysis on output streams and valuations to help de-risk and advance anaerobic digestion investment.

Looking forward, another area of interest to advance rural economies is the green hydrogen and ammonia opportunity.

Green ammonia is intriguing as both an energy source that is easily convertible to hydrogen and for agricultural applications such as grain drying, utilization in agricultural equipment, as well as for a low-carbon fertilizer.

The University of Minnesota Western Central Research and Outreach Center pilot facility in Morris, Minnesota has been at the front edge of innovation in this area and AURI is excited to collaborate with them on agricultural market opportunities for green hydrogen and ammonia.

One could imagine a model similar to cooperative ethanol facilities, where farmer owned businesses produce their own green ammonia energy and fertilizer locally via this renewable process. Green ammonia utilization would reduce the carbon intensity of their crops that could then command premiums in products such as grains, meat, dairy, and biofuels, while also providing a renewable energy product that can be sold, stored, and/or utilized in farming operations. The cycles for energy demand for agriculture (spring and fall) and the public (summer, winter) are also offset, which adds to the intrigue of a consistent demand state for green ammonia.

Conclusion

In closing, the renewable energy sector represents many innovative prospects that can create new rural economic opportunities.

Applied technical assistance and research programs, such as those operated by AURI, have proven to show a positive return on investment. Continued public and private investment into research and development programs along with the stability that the RFS provides will support and foster new renewable energy opportunities that will generate value to producers, rural businesses and rural communities while also meeting a growing consumer demand for more sustainable products.

I appreciate your time and opportunity to share some perspectives today on the role agriculture can and does play in the renewable energy area to support rural economies.

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Chair Smith, Ranking Member Ernst and Members of the Subcommittee:

I am Katie Sieben and it is an honor to testify today on behalf of the Minnesota Public Utilities Commission, where I serve as the chair and one of the five commissioners. The Commission regulates our state's electric and natural gas providers and our mission is to create a regulatory structure that ensures reliable utility services at fair, reasonable rates consistent with Minnesota's telecommunications and energy policies. We are economic regulators primarily, but increasingly, we are seeing and measuring the impact of the clean energy transition on Greater Minnesota. Today, I'd like to share several points about the importance of ensuring the benefits of clean energy reach rural communities, and offer some insights into how we, as regulators, have played a role in this.

First, and importantly, low prices for electricity and natural gas are critically important for economic growth, whether that is in Fergus Falls or the Twin Cities. Bills that our customers pay are lower than the national average, and this is partially because our state has prioritized conservation. This year, the state legislature passed a nation-leading Energy Optimization and Conservation Act, which will double down on conservation and build on the 47,000 statewide clean energy jobs that help Minnesotans in rural and urban parts of the state use less power, lower their bills and reduce pollutants.

In Minnesota, we are fortunate to have an abundance of natural resources, including some of the best wind resources in the country and great solar resources, as well. In fact, in 2020, renewable energy became the number one source of electricity generation in Minnesota for the first time, providing twenty-nine percent of power, up from twenty-five percent in 2019, and eighteen percent in 2011.

The Minnesota Commission works hard to ensure a robust, participatory permitting process so that developers and utilities can build needed generation to deliver reliable power, and local communities benefit from this new generation, which is often replacing fossil generation sources. As older generators reach the end of their useful lives and utilities either set their own emission goals or are directed to by policymakers, new renewable energy is taking its place. In 2020, Minnesota built 588 MW of new generation capacity, and all of it was renewable generation, and all was located in rural communities across Minnesota.

The financial upside of this new generation is significant for local governments and their taxpayers. Production and other negotiated payments from renewable facilities can help spur economic development and keep taxes lower.

Since 2004, wind energy production tax has generated over $133 million in revenue for Minnesota counties, which has led to job growth, increased community investment, and infrastructure development. There are counties in southern Minnesota that receive more than a quarter of their yearly budget in wind production tax revenues. There are also, of course, tens of millions of dollars of payments to landowners, many of whom are farmers that invest these payments in local communities.

To calculate the socioeconomic benefits of the clean energy build-out, one must consider the tax impacts and the job creation. In Minnesota, when the Commission began asking developers in 2018 to report quarterly on the number of jobs created in large wind and solar construction projects, it signaled to developers and the industry that it was a priority of the Commission for the benefits of these expensive projects to flow to local workers, their families and rural communities. Since we began requiring quarterly reporting on the use of local labor-- defined as people who live within 150 miles of the project--we have seen a significant shift in the percentage of local workers hired. Recent wind project labor reports are showing a dramatic increase in the use of local labor; historic local labor use was estimated to be below twenty percent and is now showing local labor rates of seventy to eighty percent. This has resulted in a better trained workforce in many areas of the state and has encouraged the development of worker training programs that lead to new job pathways. While the Minnesota Commission now asks developers to report on the direct economic benefits of job creation, there are indirect benefits that are harder to quantify, but certainly are assisting rural economies as well.

When the COVID-pandemic hit last year, it led to a dramatic loss of clean energy jobs across the country, and an estimated loss of 11,000 clean energy jobs in Minnesota alone. The Minnesota Commission, knowing that the energy sector represents one-sixth of our state's economy, understood that the state's energy sector needed a boost. The Commission requested that utilities accelerate investment in clean-energy projects that would spur economic development, lower rates, reduce emissions and importantly, create jobs. The utilities responded, and the Commission has permitted clean energy projects that are helping to revitalize communities while keeping rates low. We have asked utilities to report on the number of direct and indirect jobs created, the reduction in emissions, and the use of women, minority and veteran owned businesses in their workforce or contracting provisions. Here are two examples:

Xcel Energy is in the process of repowering six wind projects across Greater Minnesota. The repowering alone will result in over 800 jobs, annual property tax revenue of roughly $4 million per year, and annual landowner payments of roughly $6 million per year, all while saving ratepayers an estimated $160 million.

Second, the Duluth, Laskin and Sylvan Solar projects were approved for Minnesota Power, which is headquartered in Duluth, Minnesota. The company is building three solar facilities, totaling 21MW of capacity, using highly skilled labor, contracting with minority owned businesses and using locally manufactured solar panels. Importantly, there was extensive, robust community support for these three solar projects.

While the COVID recovery dockets led to an innovative approach to our normal regulatory work, there are other exciting projects in the development stages as well. The Commission is carefully following the growth of renewable fuels, such as hydrogen and renewable natural gas (RNG), and we recently approved the first tariff for RNG that could result in future projects incorporating biofuels and emerging technologies.

Finally, I want to emphasize that transmission investments are needed, desperately, across the Midwest and throughout the country. New transmission can maximize the value of low-cost, renewable energy. Additionally, transmission projects will actualize significant economic benefits, including job creation in rural communities. But perhaps most importantly, transmission is needed to ensure a resilient, robust power supply. Please include transmission investments in the American Jobs Plan or other relevant legislation. These investments will help ensure a more reliable, robust grid, and the economic benefits will help rural communities thrive.

Thank you for your time today and for your leadership in supporting our rural communities as our energy systems are transforming. I am happy to answer questions you may have.

Testimony before the U.S. Senate Committee on Agriculture, Nutrition, and Forestry

Subcommittee on Rural Development and Energy

"Renewable Energy – Growth and Opportunities for our Rural Economies"

Emily Skor, CEO
Growth Energy

June 22, 2021

Chairwoman Smith, Ranking Member Ernst, and distinguished Members of the Subcommittee on Rural Development and Energy, it is my privilege to join you today to speak about the economic and environmental benefits of ethanol – a clean, low-carbon, homegrown renewable fuel.

My name is Emily Skor, and I am the CEO of Growth Energy, the nation's largest ethanol industry association that represents over half of all U.S. ethanol production, including 92 producer plants, 91 innovative businesses that support biofuels production, and tens of thousands of ethanol supporters around the country. We are committed to bringing environmentally friendly biofuels into our nation's transportation fuel supply, helping our country diversify our energy portfolio, growing the number of clean energy jobs, sustaining family farms and rural communities, and driving down fuel costs at the pump for consumers.

My comments today will focus on the outsized benefits of homegrown, renewable ethanol for our rural economy and our planet, as well as the means through which we can work together to accelerate its use at home and abroad. Specifically, I will explore the following:

- The biofuels value proposition
  - A key solution to climate change
  - The engine of our rural economy
- Policies needed to accelerate the use of biofuels
  - Invest in infrastructure for E15 and beyond
  - Optimize the Renewable Fuel Standard (RFS)
  - Ensure access to international markets
  - Support industry COVID recovery

Biofuels: A Key Solution to Climate Change

Addressing climate change is one of our nation's most pressing challenges, and the decisions we make now will have a lasting impact on future generations. There is no one-size-fits-all path toward decarbonization, so we must deploy all cleaner transportation solutions. Any national strategy aimed at addressing climate change must include biofuels, which can immediately lower greenhouse gas (GHG) emissions and help decarbonize our transportation sector.

Renewable biofuels like ethanol can accelerate our transition to a healthier, net-zero emission, 100% renewable energy future. Plant-based ethanol is low-carbon, can be used in our current auto fleet, and is affordable, keeping fuel prices lower for all drivers in all communities. Drivers today can choose fuel blended with ten-percent ethanol (E10), fifteen-percent ethanol (E15), or up to eighty-five percent ethanol (E85).

A recent January 2021 study by Environmental Health and Engineering, Inc. found that **ethanol reduces GHGs by 46%[1] compared to traditional gasoline**. Corn ethanol's relative carbon benefits could reach up to 70% by 2022, according to the U.S. Department of Agriculture (USDA)[2]. Biofuel use between 2008 and 2020 has already resulted in cumulative reductions of almost 1 billion metric tons of carbon dioxide-equivalent GHG emissions. Additionally, a nationwide transition from E10 to E15 would lower GHGs by 17.62 million tons annually, the equivalent of removing 3.85 million vehicles from the road[3].

Environmental Protection Agency (EPA) Administrator Michael Regan's response to a question about biofuels' role in addressing carbon emissions reflects the importance of biofuels in achieving our climate goals:

> "I think the President is very clear on this that agriculture is at the table, and that biofuels plays a role in reducing our carbon footprint, and so do many of the voluntary practices of our ag community to capture carbon, and to operate in a sustainable manner. So, again, I think the President's been very clear that agriculture is at the table and plays a significant role."
>
> Michael Regan, EPA Administrator, April 28, 2021
> U.S. Senate Committee on Environment and Public Works Hearing

We also have real world results on the use of biofuels to meet climate goals – California's Low Carbon Fuel Standard (LCFS).

California's LCFS

The goal of the LCFS is to, "encourage the use of cleaner low-carbon transportation fuels in California, encourage the production of those fuels, and therefore, reduce GHG emissions and decrease petroleum dependence in the transportation sector[4]."

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[1] "Carbon Intensity of corn ethanol in the United States: State of the science," *Environmental Health & Engineering Inc.* Melissa Scully, Gregory Norris, Tania Alarcon Falconi, and David MacIntosh (March 2021). https://iopscience.iop.org/article/10.1088/1748-9326/abde08

[2] "The greenhouse gas benefits of corn ethanol—assessing recent evidence," *Biofuels*. Jan Lewandrowski, Jeffrey Rosenfeld, Diana Pape, Tommy Hendrickson, Kirsten Jaglo, Katrin Moffroid (2020). 11:3, 361-375, DOI: 10.1080/17597269.2018.1546488.

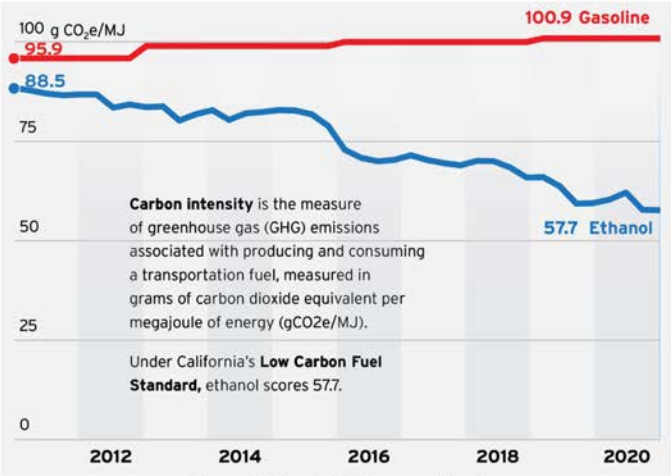
[3] "GHG Benefits of 15% Ethanol (E15) Use in the United States," Air Improvement Resources, Inc. http://www.airimprovement.com/reports/national-e15-analysis-final.pdf

[4] California Air Resources Board. Accessed 6/15/2021, https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about

According to data by the California Air Resources Board (CARB), biofuels are responsible for nearly 80% of all carbon reductions credited under the LCFS, with the recorded carbon intensity (CI) of ethanol declining 33% since 2011[5].

CARB tracks the CI of a variety of fuel options and has updated the CI scores annually since the state's LCFS was adopted in January 2011. Figure A shows the steady decline in CI score for ethanol and the uptick in CI score for gasoline over the same period.

Figure A: CARB's Carbon Intensity Scores of Ethanol and Gasoline



Source: California Air Resources Board

Improvements in ethanol's CI scores can be attributed to the biofuel industry's increased efficiencies in land use. America's corn growers are producing stronger yields with less acreage, and biorefineries can manufacture more gallons of ethanol per bushel of corn. Total cropland acreage has fallen from 470.8 million acres in 1978 to 391.9 million acres by 2012[6].

Moreover, yields of corn have increased dramatically over the last 50 years, increasing from 72.4 bushels per acre in 1970 to 172 bushels per acre in 2020. Over the last 10 years, corn yield has increased by 20%, while the amount of land planted for corn has remained steady.[7] Figure B demonstrates the improvements in corn yields over the last 150 years.

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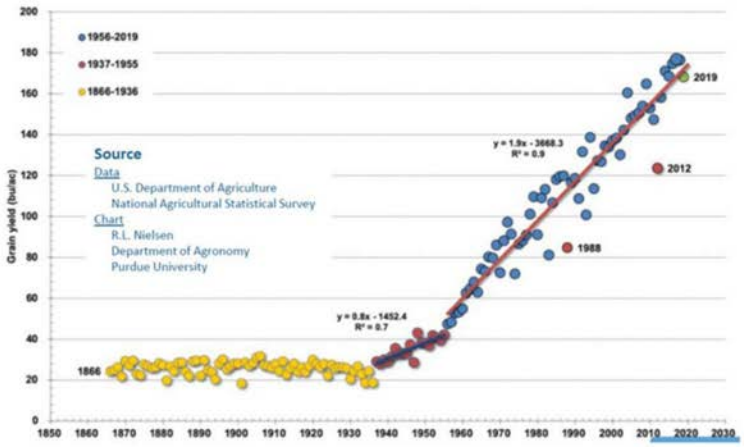
[5] "Data Dashboard: Low Carbon Fuel Standard," California Air Resources Board. May 2020, https://ww3.arb.ca.gov/fuels/lcfs/dashboard/dashboard.htm.

[6] "Cropland, 1945-2012, by State: The sum of cropland used for crops, cropland idled, and cropland used for pasture," U.S. Department of Agriculture's Economic Research Service. August 2017, https://www.ers.usda.gov/data-products/major-land-uses/

[7] "Crop Production Historical Track Records," National Agricultural Statistics Service. April 2021, https://www.nass.usda.gov/Publications/Todays_Reports/reports/croptr21.pdf

Figure B: U.S. Corn Grain Yield Trends since 1866



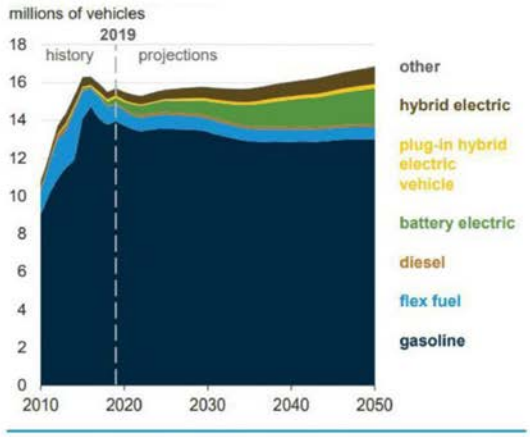
Source: USDA-NASS

Approximately 50 U.S. biorefineries already capture, clean, and condense carbon dioxide. Installation of carbon capture, utilization, and sequestration (CCUS) equipment at biorefineries also reduces ethanol's CI score. Adding this type of equipment can reduce ethanol's CI score by 25-30 gCO2e/MJ on average, a significant decrease. With a nationwide fleet of more than 200 biorefineries, there is room to expand even further on these benefits, which will be needed for decades to come.

The environmental advantages of ethanol are clear, and ethanol must continue to play a significant role in decarbonizing our vehicle fleet now and well into the future. According to the U.S. Energy Information Administration (EIA), as shown in Figure C, light-duty vehicle sales for gasoline-powered vehicles will continue to dominate the market for the next 30 years. While electric vehicles certainly have a role to play in our overall portfolio of options for reducing carbon emissions, the fact remains that internal-combustion engines will be around for decades.

We must continue to promote further adoption of biofuels like ethanol if we are to achieve meaningful results and accomplish President Biden's commitment to cut our nation's GHGs by 50% by 2030 and reach net-zero emissions by 2050.

Figure C: Light-duty Vehicle Sales by Fuel Type



Source: U.S. Energy Information Administration

It is also important that we use the most updated science when modeling the GHG benefits of renewable fuels including ethanol. Our agencies should be using models that are updated annually in order to more accurately reflect the GHG savings of ethanol.

For example, EPA currently uses outdated GHG emissions modeling. Updating EPA's data and modeling would provide a more accurate representation of the technological advancements made in ethanol production over the past decade, especially considering the CI score improvements recognized in California's LCFS (see Figure A). The Argonne National Laboratory's Greenhouse gases, Regulated Emissions, and Energy use in Technologies Model (GREET) is a more reliable analytical tool used by the Department of Energy that should also be adopted by the EPA. We appreciate congressional efforts to require EPA and other agencies to use the GREET Model when scoring biofuels.

Growth Energy supports Senator John Thune's (R-SD) *Adopt GREET Act* (S. 193) which requires EPA to updates its methodology by using the GREET Model for modeling the CI of ethanol.

Given the continuous improvement of ethanol's CI score and the need to decarbonize gasoline-powered vehicles for decades to come, the USDA and other agencies will play primary roles in promoting the success of low-carbon fuels like ethanol and supporting farmers along the way.

Biofuels: The Engine of our Rural Economy

Biofuels have long been an economic driver for our rural economies. The United States is home to 210 biorefineries across 27 states that have the capacity to produce more than 17 billion gallons of low-carbon, renewable liquid fuel while supporting more than 300,000 American jobs. Ethanol is also the second-largest customer to 300,000 U.S. corn growers with roughly one-third of the field corn crop used to produce fuel ethanol each year[8]. Biorefineries employ a skilled workforce in small, rural communities and are often the epicenter of the local economy. Accordingly, we have a strong interest in the future success of American agriculture.

In a February 2020 study, ABF Economics broke down the economic impact ethanol production brought to each state in 2019 which is shown in Figure D[9].

Figure D: Contribution of Ethanol Production to Individual State Economies, 2019*

	Production (Mil Gal)	Production Share	GDP ((Mil $)	Employment Jobs	Income (Mil $)
IA	4,126	26.0%	$9,096	82,294	$4,910
NE	2,176	13.7%	$4,797	43,401	$2,589
IL	1,833	11.5%	$4,041	36,560	$2,181
MN	1,315	8.3%	$2,900	26,232	$1,565
IN	1,083	6.8%	$2,388	21,601	$1,289
SD	1,002	6.3%	$2,209	19,985	$1,192
WI	648	4.1%	$1,429	12,924	$771
ND	487	3.1%	$1,074	9,713	$579
KS	518	3.3%	$1,142	10,332	$616
OH	408	2.6%	$900	8,138	$485
TX	335	2.1%	$739	6,682	$399
MI	283	1.8%	$624	5,644	$337
TN	230	1.4%	$507	4,587	$274
MO	165	1.0%	$364	3,291	$196
NY	165	1.0%	$364	3,291	$196
CA	158	1.0%	$348	3,151	$188
CO	125	0.8%	$276	2,493	$149
GA	120	0.8%	$265	2,393	$143
PA	110	0.7%	$243	2,194	$131

*Excludes construction, exports and R&D

Source: ABF Economics

[8] National Corn Growers Association. https://www.ncga.com/key-issues/current-priorities/ethanol

[9] "Contribution of the Ethanol Industry to the Economy of the United States in 2019," Urbanchuk, John M., Managing Partner. February 4, 2020. https://files.constantcontact.com/a8800d13601/9e769376-3aef-4699-b31f-3c6415b8fa63.pdf

Another ABF Economics study in June 2021[10] shows that moving to a nationwide E15 standard would offer even further economic benefits:

- Add $17.8 billion to the U.S. Gross Domestic Product
  - $27.9 billion would come from boosted corn production
- Support an additional 182,700 jobs
  - 76,000 of these would be in agriculture
- Generate $10.5 billion in new household income
- Save consumers $12.2 billion fuel costs
  - E15 is typically $0.05 to $0.10 cheaper than E10 due to the higher ethanol content

Agriculture jobs that would be supported by a nationwide E15 standard include farm advisors, producers, distributors of crop protection and fertilizer products, farm equipment, and other service providers. These jobs are typically located in rural parts of the United States and would greatly benefit from more biofuel production due to E15 expansion efforts.

Ethanol Production Co-Products

Biorefineries also produce several valuable co-products, which are integral to related supply chains. The industry produced an estimated 43.6 million short tons of distiller's grains and nearly 3.9 billion pounds of distiller's corn oil (DCO) in 2019 with an aggregate market value for these products at $7.5 billion[11]. Distiller's grains are a high-protein feed purchased by local livestock farmers and provide a steady stream of animal feed for their farms. Roughly half of all DCO is used in animal feed, while the other half is used by the biodiesel industry in their production process.

As stated above, about 50 biorefineries have the ability to capture a pure-stream of carbon dioxide, which has a wide variety of uses including water treatment at municipal water facilities, food and beverage preservation, and permanent sequestration into geological formations. During the peak of the COVID-19 pandemic, the ethanol industry also stepped up during a national hand-sanitizer shortage, converting ethanol production to produce high-quality, pharmaceutical-grade hand sanitizer for local hospitals and consumers. Captured carbon dioxide is also being used as dry ice for the safe transportation of COVID-19 vaccinations.

To build upon the economic successes of biofuels, the proper implementation of infrastructure programs directly impacts rural economies and the farmers that support them.

Invest in Biofuels Infrastructure for E15 and Beyond

USDA's 2015 Biofuel Infrastructure Partnership (BIP) and the 2020 Higher Blends Infrastructure Incentive Program (HBIIP) are prime examples how the department can support the productivity of our farmers and boost rural economies while decreasing GHG emissions.

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[10] ABF Economics. "Economic Impact of Nationwide E15 Use," Urbanchuk, John M. June 10, 2021. https://growthenergy.org/wp-content/uploads/2021/06/Nationwide-E15-Use-Economic-Impact-Final.pdf

[11] "Contribution of the Ethanol Industry to the Economy of the United States in 2019," Urbanchuk, John M., Managing Partner. February 4, 2020. https://files.constantcontact.com/a8800d13601/9e769376-3aef-4699-b31f-3c6415b8fa63.pdf

Currently, more than 95% of cars on the road are compatible with E15[12], and consumers have driven more than 21 billion miles on E15. There is a significant market available today for higher blends of biofuels if consumers can access these products. The biofuels industry is ready to provide the fuel necessary to meet those demands; however, long-term infrastructure incentives for our retailers, like the competitive grant structure under BIP and HBIIP, must be available.

Demand for these grants exceeded funds available, demonstrating that retailers and the consumers they serve want a lower cost fuel and more choices at the pump. This gives retailers a competitive advantage in the market while providing our transportation sector a higher quality fuel that decreases GHG emissions.

Growth Energy's Prime the Pump initiative provides important historical perspectives to inform specific recommendations for future biofuel infrastructure programs under USDA.

Prime the Pump

The Prime the Pump (PtP) initiative was developed to help accelerate the adoption of E15 in the United States. Evaluating the limitations of previous grant programs, PtP established a set of grant guidelines that incentivized retail gas stations to accelerate E15 adoption. To qualify for a PtP grant, a retailer would agree to offer E15 at the majority of the dispensers on the property, follow all legal requirements for dispensing the fuel, promote the price of E15 on street signs, and offer E15 for at least five years.

In return, PtP would offer a grant that would either off-set the incremental cost of adding E15 to the retail site or provide the retailer with an incentive for selling E15. If offsetting costs, PtP grant dollars addressed a wide variety of needs including adding tanks, pipes, sump pumps, drop tubes, and new dispensers. This flexibility afforded PtP the ability to work constructively with retailers to meet their specific needs and maximize E15 sales.

Though managing the cost per grant is vital to PtP, maximizing the potential market growth of higher ethanol blends is its primary focus. To maximize growth, PtP evaluates grants based on the gasoline volume sold by each retailer. For example, if PtP were to target a $0.05 per gasoline gallon incentive for the average retailer that sells one million gallons of gasoline sales per year, this grant approach would provide them with an average grant of about $50,000. More importantly, the incentive would be paid based on increasing sales of E15.

Using this approach, PtP has worked to secure funding for more than 90% of the E15 stations to date. There are 5,100 total stations that sell higher-level ethanol blends, with 2,444 of them selling E15 and 4,545 sites selling E85. Our retail partners report that sales of E15 are as much as 60% of total fuel sales, validating that consumers value this engine smart, earth kind fuel.

Initiatives to increase consumer access to higher biofuel blends like E15 and beyond can build on biofuels' environmental progress and expand the market for American agriculture.

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[12] Air Improvement Resources, Inc. "Analysis of Ethanol Compatible Fleet for Calendar Year 2021," November 9, 2020. https://growthenergy.org/wp-content/uploads/2020/11/Analysis-of-Ethanol-Compatible-Fleet-for-Calendar-Year-2021-Final.pdf

Biofuels Infrastructure Partnership
In 2015, U.S. Secretary of Agriculture Tom Vilsack announced the creation of BIP to drive further investment in biofuels infrastructure for E15 and E85. This generated even more momentum to expanding consumer access to higher blends of ethanol. Within 30 days of the announcement, more than 1,000 retail sites expressed interest, with an estimated grant cost of about $162 million. BIP was administered by the USDA Farm Service Agency through individual states.

Despite BIP's popularity, there were challenges in its implementation as each state was required to apply for BIP grant funds. Some states requested BIP funds above their retail commitments, and there was no mechanism that would allow funds to be reallocated to a state with higher retail demand. USDA required state-specific contracts state, and states varied in how they administered the program. Unfortunately, many larger retailers opted to pass on BIP due to the fact that they would have to manage too many contrasting contracts across different states.

But the program was an overall success and served as a foundation for another infrastructure program several years later.

Higher Blends Infrastructure Incentive Program
In May 2020, U.S. Secretary of Agriculture Sonny Perdue announced the HBIIP program with $100 million for infrastructure for higher biofuel blends, including $86 million for ethanol. HBIIP was administered through USDA Rural Development to allow grants to be provided directly between USDA and individual retailers rather than running it through the states.

Growth Energy's network of both large and small retail partners through PtP secured nearly $30 million from USDA's HBIIP program for over 290 sites selling 400 million gallons of gasoline annually. The public and private investments we have seen through HBIIP allowed retailers to continue upgrading infrastructure for higher blends of ethanol and expand consumer access to this cleaner-burning, more affordable fuel across the country.

However, certain limitations of the program were difficult to overcome. HBIIP grants were limited to $5 million per applicant. This cap limited the amount of infrastructure grants that could have been deployed to large-volume retailers with a multi-state footprint, and therefore limited the amount of throughput for higher biofuel blends. Unlike BIP, HBIIP grants were also limited to retailers and did not include wholesale entities were previously qualified under BIP. Few retailers had experience in the grant process and found it difficult to navigate the System for Award Management.

Recommendations for the Next Infrastructure Program
With hindsight on BIP and HBIIP, we have three different recommended approaches we encourage the Senate Agriculture Committee and USDA to consider for the next round of infrastructure incentives for higher blends:

1. **Use an equipment-focused approach and allow all fuel dispensing and underground storage equipment upgrades to be eligible under a future grant program.**

Historically, BIP and HBIIP have focused on dispenser replacement and underground storage tanks. However, there are more than 100 pieces of equipment needed to legally dispense fuels, so the cost per site can vary widely based on retailer needs. Based on PtP historical sales data provided by retailers, assuming a $100 million grant program, this program would generate about 850 million gallons of E15 sales. The program should also require that E15 is sold on a shared hose with other grades of fuel to make consumer access as easy as possible.

2. **Provide a sales incentive for retailers offering E15.**

Industry research by the National Association of Convenience Stores[13] found that consumers will drive five miles out of their way to save $0.05 per gallon. By providing a $0.05 per gallon of E15 incentive, a $100 million grant program has the potential to yield nearly 2 billion gallons of E15 sales. Offering retailers a performance incentive along with small bonus payments for installation targets has been the optimal method for PtP.

We appreciate congressional efforts by many of those on the Subcommittee to support a blending tax credit for E15 and beyond to encourage further adoption of higher blends.

3. **Eliminate grant caps and reduce the paperwork needed by a retailer.**

We have seen grant caps restrict access for additional funds for large-volume retailers. We recommend eliminating caps on larger retail chains who want to upgrade hundreds of stores and provide E15. For small retailers, reducing the amount of paperwork will help them access infrastructure grants. Lastly, we recommend that any future grant programs allow companies which aggregate fuel for several small retailers be eligible to participant in the program as well.

In the end, flexibility is the most important aspect for the next infrastructure program. Focusing the grants solely on dispensers and tanks, placing caps on grants, or issuing too many burdensome administrative hurdles limit overall access to the program. We encourage the subcommittee and USDA to leverage learnings from previous public and private grant programs and Growth Energy will lend our expertise to help in any way we can to ensure a future program is another success.

Other Infrastructure Opportunities

In President Biden's recently released budget proposal for FY2022, a line item allocated $1 billion to provide support for biofuels over a three-year period ($500 million in 2022, $250 million in 2023, and $250 million in 2024). We strongly believe these funds should be used for biofuels infrastructure investments. Any budget package agreed to by Congress must include biofuels infrastructure funding to expand consumer access to higher blends like E15.

We also strongly support efforts by those on this subcommittee to introduce legislation which provides infrastructure incentives for E15 and higher blends. For example, Senator Amy

[13] National Association of Convenience Stores. "2015 Retail Fuels Report," Page 12. https://www.convenience.org/

Klobuchar's *Renewable Fuel Infrastructure Investment and Market Expansion Act* (S. 227), which is co-led by Ranking Member Joni Ernst.

To build on our infrastructure successes, it is critical that Members of Congress support our efforts to optimize the RFS, a bedrock renewable energy policy which has congressional intent to increase the amount of biofuels blended into our transportation sector.

Optimize the RFS

The success of our agriculture communities is directly tied to the success of the biofuels industry, so it is critical to maintain the integrity of the RFS.

Despite the demonstrable economic, environmental, and energy security success of this renewable energy law, the Trump Administration repeatedly granted oil refiners an unprecedented number of small refinery exemptions (SREs), allowing them to avoid their obligations to blend biofuels into our national fuel supply. This resulted in 4.3 billion gallons of lost biofuel demand, as demonstrated in Figure E. Many on this subcommittee advocated on our behalf to the Trump Administration against this radical escalation of exemptions, and we thank you for those efforts.

Growth Energy also appreciates the recent bicameral letter sent by 16 Democrat Members of Congress to EPA and the White House. Following a *Reuters* news report[14] that the Biden Administration was considering providing relief to refineries that refuse to blend biofuels, our congressional champions stepped up to the plate on our behalf. We thank you for your advocacy efforts to this administration as well.

We strongly urge the Biden Administration to uphold the integrity of the RFS program by encouraging more renewable, low-carbon fuel blending. Furthermore, the administration should deny pending waiver requests from refiners and state governors, narrow the use of SREs in line with the decision in the 10th Circuit Court of Appeals, and not otherwise undercut the bipartisan commitment to more renewable fuel blending.

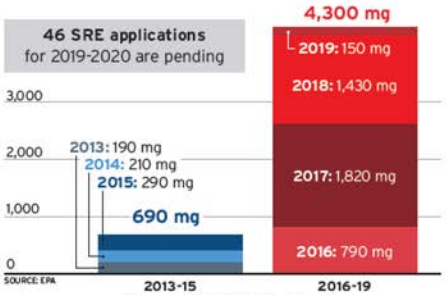
Small Refinery Exemptions

The SRE authority was included under the Clean Air Act to provide small refineries (those with a daily input capacity of less than 75,000 barrels of crude oil) with a temporary avenue to avoid blending obligations. But in the past few years, the number of SREs increased six-fold with no explanation or transparency in the process as to which refineries received an exemption and why.

As shown in Figure E, EPA granted 88 SREs over four years, which costed the industry 4.3 billion gallons of lost biofuel demand. Many of the SREs went to some of the largest, most profitable oil companies in the world.

[14] *Reuters*, June 11, 2021. https://www.reuters.com/business/energy/exclusive-biden-mulls-giving-refiners-relief-us-biofuel-laws-sources-2021-06-11/

Figure E: SREs by Administration



Source: EPA's SRE Dashboard

In January 2020, the 10th Circuit Court of Appeals issued a unanimous decision that invalidated SREs granted by EPA to three refineries for the 2016 and 2017 compliance years. The refineries petitioned the U.S. Supreme Court for review of the decision, and the case was argued before the Court on April 27, 2021. Following a change in EPA agency leadership, the Biden EPA now agrees with the 10th Circuit Court's ruling, and EPA defended the decision before the Supreme Court. The agency agrees that the SRE authority was intended to operate as a temporary measure, and it joined the biofuels industry in Supreme Court oral arguments.

We expect the Supreme Court to issue its opinion in the coming weeks.

RIN Prices

Renewable Identification Numbers (RINs) were included in the RFS to add flexibility to the compliance mechanism of the RFS. Obligated parties have the option to either blend biofuels and generate RINs or purchase RINs to meet their obligations under the RFS.

We are aware that some refiners that have chosen to purchase RINS in lieu of blending renewable fuels are seeking a waiver for their blending obligations, citing economic hardship as a result of high RIN prices. Some refineries claim this causes higher gasoline prices. To be clear, there is no relationship between RIN prices and refinery profits, as EPA has repeatedly stated:

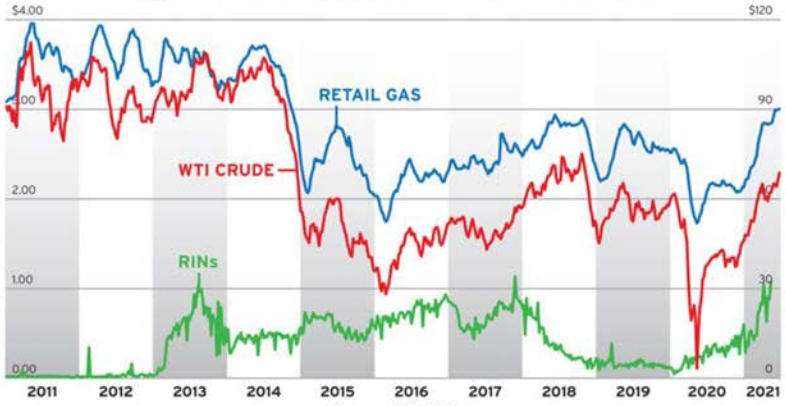
> "We do not believe that the price paid for RINs is a valid indicator of the economic impact of the RFS program on these entities [refiners], since a narrow focus on RIN price ignores the ability for these parties to recover the cost of RINs from the sale of their petroleum products."
>
> EPA, November 2017

First, as EPA wrote in November 2017, refiners recoup the cost of RIN purchases when they sell petroleum products on the market. Any RIN cost is incorporated into the sell price, so refineries account for this during their transactions.

Second, refineries have had more than 13 years to comply with the RFS, a law which was constructed to encourage an increasing scale of biofuel blending. Supply and demand ultimately dictate price, so more blending creates more RINs which in turn push RIN prices down. The easiest way to lower RIN prices is to blend more biofuels.

With respect to gas prices, as shown in Figure F, gas prices are directly correlated with the price of crude oil, not RINs. According to the EIA, crude oil is the most impactful contributor, accounting for 56% of the price of gasoline[15]. The RIN market is independent from gas prices and instead reflects the blending decisions by obligated parties.

Figure F: Price of Retail Gas, WTI Crude, and D6 RINs



Source: EPA, EIA

The RFS works best when it is implemented in accordance with congressional intent. We encourage members of this subcommittee and the administrative bodies it oversees to maintain the integrity of the RFS.

Ensure Access to International Markets for U.S. Ethanol

As nations around the globe are looking to achieve their carbon reduction goals, international markets are turning to biofuels as a solution. However, tariffs, technical trade barriers, and follow-through on trade agreements pose challenges to U.S. exporters looking to fulfill growing biofuel demand abroad.

The USDA designates an official trade representative who leads efforts on promoting U.S. agricultural products, including biofuels, abroad. USDA Secretary Vilsack has not yet selected a nominee to fill that position, but we encourage him to do so as soon as possible.

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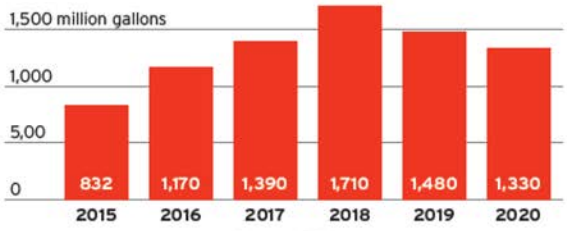
[15] U.S. Energy Information Administration. "Gasoline explained – Factors affecting gasoline prices," https://www.eia.gov/energyexplained/gasoline/factors-affecting-gasoline-prices.php

In 2020, U.S. ethanol exports totaled 1.33 billion gallons which fell 9.8% compared to 2019[16]. The decline is almost entirely due to COVID-19's downward impact on gasoline demand, as shown in Figure G. In Q1 2021, the U.S. exported 399.2 million gallons of ethanol. If extrapolated through the year, this is on pace to exceed 2019 exports.

Figure G: Total U.S. Ethanol Exports by Year



Source: USDA

Growth Energy has been working closely in key U.S. export markets such as Brazil, Canada, and China to encourage the adoption of biofuels as a displacement to petroleum products. Expanding ethanol use around the world will boost domestic production and help countries meet their carbon reduction and clean air commitments at the same time.

Support Industry COVID Recovery

On June 15, 2021, USDA updated its announcement that it will provide $700 million in aid to support biofuel producers recover from the wake of the COVID-19 pandemic. The funds will be distributed through USDA's Pandemic Assistance for Producers initiative to provide additional relief to the farmers that depend on a vibrant biofuels industry.

Although the details on how these funds will be distributed remain opaque, Growth Energy has provided USDA the following suggestions, which we urge you to support:

1. **Assistance should only be available to biorefineries that were in normal operation between Jan. 1 and March 1, 2020.**

As the emergency relief funding is intended to address only revenues lost as a direct result of COVID-19, ethanol biorefineries that were not operating normally prior to the pandemic should not qualify to receive assistance.

[16] U.S. Department of Agriculture, Foreign Agricultural Service. "Biofuels," https://www.fas.usda.gov/commodities/biofuels

2. **Assistance levels should be the same on a per gallon basis for each biorefinery who seeks assistance.**

Because each biorefinery in operation during COVID-19 suffered the same macroeconomic economic injury due to the pandemic, each biorefinery should receive the same per gallon level of assistance. We recommend providing assistance of 10 cents a gallon based on each qualifying biorefinery's production in 2019, the last full year before COVID demand destruction.

3. **Payments made to biorefineries should be made public.**

We support making available to the public information on which entities are receiving assistance and in what amount.

We are grateful for this support from USDA which reflects President Biden's repeated promises to support rural and clean energy jobs. We will monitor the details of this aid closely.

Conclusion

The biofuel industry stands ready to work with Congress and the Biden Administration to meet our national climate change needs while supporting rural development and energy. With forward-leaning policies that support innovation and access to markets, our industry will continue to reduce our carbon footprint, create more clean energy jobs, spur economic activity in rural and farming communities, and provide drivers across the country with affordable, clean fuel choices today.

Congress can help accelerate our transition to a clean energy future and a prosperous rural America. Infrastructure investments will expand consumer access to higher fuel blends of homegrown, plant-based biofuels like E15. Ensuring the RFS is administered as intended by Congress will guarantee that we blend more low-carbon renewable fuel in our transportation sector each year. Reducing trade barriers to U.S. ethanol allows greater access to foreign markets, boosts our domestic production, and assists other countries meet their carbon reduction commitments.

In short, we have ample opportunity to achieve our renewable energy goals while supporting an industry that has supported rural America for decades.

I appreciate the opportunity to participate in this important hearing on renewable energy's role for agriculture and rural economies.

Thank you and I look forward to answering your questions.

##

WRITTEN TESTIMONY OF
BILL CHERRIER OF CENTRAL IOWA POWER COOPERATIVE (CIPCO)
BEFORE THE UNITED STATES SENATE AGRICULTURE COMMITTEE
RURAL DEVELOPMENT AND ENERGY SUBCOMMITTEE
HEARING ON: RENEWABLE ENERGY – GROWTH AND OPPORTUNITIES FOR OUR RURAL ECONOMIES

JUNE 22, 2021

Chairwoman Smith, Ranking Member Ernst, and distinguished Members of the Senate Agriculture Committee, on behalf of Central Iowa Power Cooperative (CIPCO), thank you for the opportunity to testify on renewable energy efforts in Iowa and the important role they play in delivering diverse, reliable power.

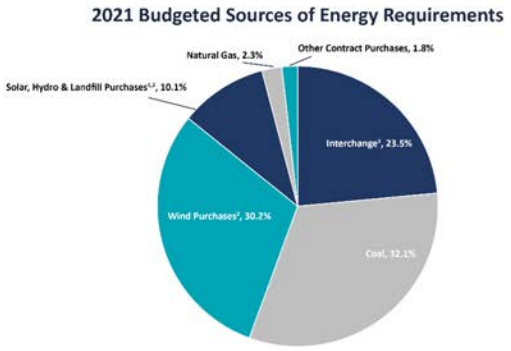
CIPCO is a generation and transmission (G&T) electric cooperative in its 75th year of operation, providing electricity to member cooperative systems across the state. As a not-for-profit energy provider, CIPCO is committed to judiciously maintaining and growing an electrical system that supplies safe, reliable, and affordable energy on a 24/7 basis in an ever-changing electric industry. CIPCO is dedicated to efficient, cost-effective operations and has proudly returned over $112,000,000 in patronage to our member distribution systems since its inception. This commitment to cost-effective measures has created system energy rates that are steady, and even declining, over the last 10 years in an industry often fraught with rising and unstable costs.

CIPCO is an all power requirements supplier for its 13 member cooperative distribution systems, which includes an association of 15 municipal systems across the state. Together, the CIPCO system serves a population of nearly 300,000 rural and urban residents and more than 13,000 small and large commercial and industrial accounts. CIPCO's territory stretches 300 miles diagonally across Iowa, adjoining 12 of Iowa's 17 cities with populations greater than 25,000 and serving 58 Iowa counties on 1,925 miles of transmission lines delivering power to over 300 member system substation delivery points through owned and contracted facilities. When looking at this data, it's important to remember that Iowans receive electric service from three types of utilities: investor-owned, municipals, and cooperatives. While the costs of poles and wires remains the same, those costs are spread amongst an average of 56 customers per mile for municipals, 28 customers for investor-owned utilities, and only 3.5 customers per mile for cooperatives. As such, CIPCO's mission of providing safe, reliable, and affordable power while maintaining stable rates is a testament to the strength of the electric cooperative system.

As the G&T, CIPCO provides generated power to member distribution systems through owned assets and long-term Power Purchase Agreements (PPAs) – contracts with third party companies who own and operate the generation. CIPCO's current diverse portfolio consists of wind, solar, hydro, landfill gas, natural gas, coal, and purchases on the market. CIPCO previously provided

nuclear baseload power from the Duane Arnold Energy Center, however that source of power ended when the facility ceased operations in 2020.

CIPCO's sources of energy have undergone significant change in the last decade and will continue doing so for years to come. In 2010, CIPCO served the power needs of its members primarily through owned assets of coal at 58.4% and nuclear at 32.1%. Wind[1] was just entering the mix as a PPA at 4.1%. As CIPCO continues diversifying generation assets, coal usage significantly dropped in 2020 to 20.6%, while wind[1] grew to 31.7% and solar[1,2] appeared at less than one percent. During its final year, nuclear represented 19.5% of the mix, a smaller number than originally projected as the plant came offline early due to damage from the August derecho storm. While CIPCO typically buys a small portion of power from the energy market to augment owned and contracted resources, the early decommissioning of the nuclear plant in 2020 led to market purchases[3] of nearly 23%.



CIPCO's portfolio continues to evolve in 2021. Annual projections for the portfolio include wind[1] at over 30% and the combination of solar[1,2], hydro and landfill gas increases to greater than 10%. System reliability depends upon the ability to back up intermittent wind and solar with firm, flexible, and dispatchable capacity, like coal and natural gas. This is particularly critical when the wind is not blowing, and the sun is not shining.

Looking forward, CIPCO projects a generation portfolio in 2030 that is over 60% wind and solar[1,2], as these resources continue to provide the lowest cost energy for CIPCO in the foreseeable future. This includes the 100 MW Wapello Solar LLC PPA that became operational in early 2021, the 100 MW Coggon Solar LLC PPA scheduled for completion in 2022, the 54 MW Independence Wind PPA scheduled for operation late this year and additional generation resources in the planning stage. However, as noted above, intermittent resources like wind and solar cannot support the system's power needs alone. A diverse portfolio that ensures baseload generation is necessary to meet the 24/7 power demands of Iowans and businesses in CIPCO's service territory, and for consumers across the country. For this reason, CIPCO recently invested $85 million in our existing Summit Lake generation plant, adding efficient reciprocating-natural gas engines that serve peak loads. The repowering of Summit Lake complements the addition of intermittent wind and solar resources in the CIPCO system while maintaining reliability across the system. This balance of intermittent resources and firm, flexible and dispatchable capacity is critical for reliability and grid stability.

As electric cooperatives across the nation work to meet the energy needs of their local communities, the ongoing flexibility of our systems to calibrate power supply with unique local factors is critical to our business. It is important for policymakers to understand that one size does not fit all. Diversity of power-generating sources helps electric cooperatives maintain affordable rates and reliable supply in the face of a rapidly changing energy market. As the policy discussion continues about the adoption of renewable energy resources and growth opportunities for rural economies, these conversations must recognize the need for a transition to be accomplished over a realistic time period while accounting for regional differences in energy resource availability.

Within the context of renewable energy and growth opportunities for rural economies, it's important for policymakers to note that the current federal tax-credit structure prevents not-for-profit electric cooperatives like CIPCO from taking advantage of the tax benefit to directly build and own wind and solar generation assets. This requires cooperatives to work with third-party providers on long-term contracts to bring this energy onto the system to benefit our member systems and those they serve at the end of the line. This unworkable incentive structure impedes the ability of cooperatives to adopt new technologies in a cost-effective way. Congress should recognize this and make the existing tax credits direct-pay eligible for electric cooperatives. With this legislative change, G&Ts like CIPCO would be better positioned to reduce the cost of wind and solar resources by building and owning them directly for the benefit of our member systems. Direct-pay incentives would level the playing field between investor-owned utilities and cooperatives, ensuring that all consumers have access to a diverse power supply mix.

Most relevant to this committee, is our interest in providing the Rural Utility Service (RUS) with the ability to allow electric cooperatives across the country to refinance the interest on existing RUS loans. While CIPCO's excellent credit rating provides access to a number of financing resources, the RUS remains a key partner for long-term success. CIPCO has partnered with RUS on project financing from the beginning with an RUS loan of $3 million in 1947. Over the last 30 years, RUS has supported CIPCO with more than $500 million in secured, long-term financing, particularly for transmission projects. Recently, low interest rates have allowed utilities with commercial loans to refinance to lower interest rates, providing needed savings, particularly during the pandemic. Unfortunately, this is not a current option with RUS loans. However, passage of the Flexible Financing for Rural America Act would allow electric cooperatives across the country to refinance the interest on existing RUS loans. According to CIPCO's national trade association, the National Rural Electric Cooperative Association (NRECA), electric cooperatives would save over $10 billion in interest across the life of the loans[4]. For CIPCO, that number is more than $21 million in savings. As a not-for-profit electric utility, the interest savings would assist with rate stability, support additional infrastructure improvements and growth, and ultimately could be returned to members as additional patronage. CIPCO values the ongoing relationship with RUS, and an efficient system that understands and values the changing utility industry is important for continued success. Investments we make today will continue grid viability and system success into the future.

Additionally, relevant to the jurisdiction of this Committee, USDA's rural development and broadband programs are essential to the communities we serve. CIPCO takes pride in the assistance offered to our communities supporting growth and economic success. The Rural Economic Development Loan and Grant (REDL&G) program is a key asset for growth in rural Iowa. In 2020, CIPCO secured 10 loans and grants to support business growth and expansion throughout the service territory, amounting to $8.7 million in investment. CIPCO is honored to have had these projects selected for the program. Additionally, the grant and loan programs provided to enhance broadband capabilities across rural areas are greatly appreciated. Nearly 200 fellow electric cooperatives in 39 states are engaged in providing broadband to their consumers where it makes sense. Affordable, reliable high-speed internet is critical for education, rural business support, economic development and growth in rural area. However, fiber optic capabilities are also necessary to support enhancements and reliability of a 21st century electrical grid. The Committee's continued support of programs for both of these purposes is essential.

A number of issues impact the electric industry today and the Committee's commitment to ensuring programs are available to support the safety, reliability and cost-effectiveness of the system is greatly appreciated. Thank you, again, for conducting this hearing to discuss the diversity necessary for today's and tomorrow's electric generation resources.

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[1] CIPCO invests in the development of renewable energy projects in several ways. We operate six small-scale solar arrays near communities we serve and retain the renewable energy credits associated with each. We also contract with energy producers for the electricity output from wind, hydro, and methane gas from a landfill (converted into electricity). CIPCO cannot claim these resources as renewable within our supply portfolio as we have either sold to third parties or do not receive the renewable attributes associated with the electricity produced from these renewable power sources. By selling these attributes (RECs), we not only support other organizations in meeting their renewable energy goals, we also generate revenue to help us lower our wholesale power rate to our 12 Member-owner distribution cooperatives and 15 municipalities.

[2] CIPCO's purchase power agreement for Wapello Solar LLC locks in stable, long-term pricing and avoids the risks associated with rising fuel costs. Renewable energy credits (RECs) are not included in this agreement.

[3] A percentage of market purchases exist within the portfolio to meet additional supply needs not covered by existing contracts or CIPCO-produced generation. Weather volatility and unplanned operational events at power plants may also impact market purchases.

[4] Author Erin Kelly, Author Media Relations, Author Victoria A. Rocha, Author Cathy Cash, Author NRECA, Author Derrill Holly, Author Michael W. Kahn, & Author Steven Johnson. (2019, December 17). *Tax and Financing.* America's Electric Cooperatives. https://www.electric.coop/issues-and-policy/tax-and-financing.

Iowa Western Community College
Written Testimony for US Senate Agriculture Committee
Energy and Rural Development Subcommittee Hearing
June 22, 2021
Matthew Mancuso, Dean of Industrial Technology

Thank you Senator Joni Ernst and the Senate Agriculture Committee for inviting Iowa Western to discuss the programming we offer at Iowa Western and the positive workforce impact graduates have on the renewable energy industry. The mission of the college includes meeting educational needs and improving the quality of life through programs, partnerships, and community involvement throughout Southwest Iowa and we believe that the Renewable Energy programs achieves this mission. The renewable energy industry is one of the fastest growing industries and it has made a positive economic impact on communities.

Iowa Western Community College

Iowa Western Community College is the sole provider of higher education in southwest Iowa which serves a seven-county, predominantly rural, 4,309 square mile district with a total population of 169,566[i] Iowa Western's main campus is located in Council Bluffs, IA, which is a part of the Omaha, NE metropolitan statistical area. Iowa Western also has four center locations in Atlantic (Cass County Center), Harlan (Shelby County Center), Clarinda (Clarinda/Page County Center) and Shenandoah (Page/Fremont County Center) to serve its rural communities. The main campus and four rural centers serve 5,997 [ii]students through access to over 90 majors that culminate in certificates, diplomas and associate degrees. Iowa Western serves an increasing number of Pell-eligible (69%), and first-generation (61%) students. Iowa Western provides crucial access to education which results in employment opportunities. Education can be in credit certificates (1 semester), diplomas (2 semesters), AAS degrees (2 years) or in non-credit short-term training.

Renewable Energy Programming

Iowa Western first offered its first renewable energy program in 2009, since then it has been through two major curriculum redevelopments. The curriculum changes were made to ensure we stay current with the local workforce needs. The current curriculum is one of the premier program pathways for renewable energy in our region. Iowa Western offers a Renewable Energy AAS, Wind Turbine Technician Diploma, and a Solar Certificate. In addition to these credit programs, Iowa Western also offers a non-credit solar certificate program. These program offerings work in alignment with each other to provide multiple pathway options for students in the renewable energy field. This purposeful alignment allows for students to enter the workforce and return to further their education seamlessly.

The Renewable Energy Associate of Applied Science[iii] is two year 67-credit hour program. The program is designed to provide the skills and knowledge required for entry-level careers in the installation and maintenance of renewable energy systems in both wind and solar industries. The first-year students learn the skills of a wind turbine technician, and then in the second year the students learn solar and then receive 12 additional credit hours in Management, English, and Social Science classes. Graduates of this program often work as wind turbine technicians or solar installation technicians for local companies.

The Wind Turbine Technician Diploma [iv]is a two semester 36 credit hour program. Students take only the first-year courses of the Renewable Energy AAS program, and then they go straight into industry instead of continuing their education. This program prepares students to climb and inspect the exterior and physical integrity of wind turbine towers. Students will learn routine maintenance on wind turbines; test and troubleshoot electrical, mechanical, and hydraulic systems.

The Solar Certificate [v]is a one semester 6-hour credit hour program. This program consists of two courses, which are also included in the second year of the Renewable Energy, AAS degree. One of the courses focuses on solar photovoltaic, and one on solar thermal and geothermal. Students in the Electrical Diploma program also take the photovoltaic, which increases the knowledge of this growing energy. HVAC students take the solar thermal class to understand thermal energy and geothermal principles. In the curriculum, Iowa Western students will take the North American Board of Certified Energy Practitioners. (NABCEP) certifications. This NABCEP certificate is an industry recognized certificate, which enhances our students' credentials for the workforce.

Iowa Western Renewable Energy Program Overview

Over the last five years, Iowa Western average enrollment of the Renewable Energy program was 16 full time students and 6 part time students per year. In that same time frame, the Renewable Energy program awarded 81 awards to those students

Last year, Iowa Western redeveloped their curriculum to be more attractive to students and increase enrollment. In addition, we expanded renewable energy coursework to students from other programs. In addition to the Renewable Energy students, this year we had 16 HVAC/R students and 19 Electrical students also taking courses in renewable energy coursework that are pertinent to their career field.

Local Workforce and Economic Impacts

Wind energy has a large economic impact for the state and for rural communities. In Iowa, there are over 5,590 wind turbines that produces over 34,139.4239 thousand megawatt hours in 2020[vi]. In Iowa Western's service area there are wind farms in Walnut, IA, Adair, IA and Shenandoah, IA. There is also a wind farm just approved for construction in Page County. Wind energy equates to 34% of Iowa's total energy production, which is the highest percentage in the nation. In 2018, there were over 10,000 Iowans directly employed in the wind energy, with the majority of them employed in operations and maintenance. Besides direct employment, there is land lease payments to the land owners, which are usually farmers, and that equated to 30 million dollars in 2020[vii]. The increase of local tax revenue from the property taxes of the wind turbines also assists with rural community development. Many rural communities that have wind farms located nearby have experienced an increase demand for housing, and local businesses see an increase in patronage from workers of this wind farm. In Walnut, IA I have witnessed workers from the

local wind farm patronage a local diner daily, which has helped that small business become more successful.

Wind technician workforce demand is high, and is growing. In Iowa, it is expected to grow by 26.9% by 2025[viii]. Students who are seeking jobs as wind technicians and graduate from the Wind Turbine Technician Diploma or the Renewable Energy AAS are quickly hired. On a weekly basis we receive notice of job opportunities from companies nationwide to recruit our students as wind technicians. Majority of the students start their careers in working in local wind farms in rural Iowa. Other students start their careers in Iowa, South Dakota, Minnesota and throughout the Midwest. After a few years, many students return to Iowa to work on the local wind farms in the communities that they are from.

Solar energy is a relatively newer renewable energy to the Midwest and to Iowa. The increased quality and the decreased pricing of solar panels have made this one of the fastest growing renewable energy in Iowa. Jobs have increased by 268% in the last decade in Iowa. Students graduating with the Solar Installation Certificate or even just taking our courses would be prepared to enter into a solar career. Solar installation is usually a part of another industry and not a standalone industry. As an example, students will work for an electrician as a solar installation technician. Many workers will also work as an electrician. This is why in the most recent curriculum change the electrical and HVAC students are taking the solar courses as this will continue to merge in their industry. We also have had a few larger construction companies hire a few of our graduates, for installation of solar fields. We expect that to grow in the future.

In closing, Iowa Western is interested in continuing to support and enhance renewable energy and rural communities. Iowa Western is committed to the success of the renewable energy industry by preparing educated students to meet the workforce demand. These students are passionate about renewable energy and many are interested in living and working in rural communities. I thank you for your time and look forward to your questions.

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[i] United States Census Bureau. June 17, 2021, https://www.census.gov/data.html
[ii] National Center for Education Statistics. June 17, 2021. https://nces.ed.gov/globallocator/index.asp?search=1&State=IA&city=&zipcode=&miles=&itemname=Iowa+Western&sortby=name&School=1&PrivSchool=1&College=1&CS=CD863D28
[iii] IW Renewable Energy Technology, A.A.S. June 17, 2021, https://www.iwcc.edu/academic_programs/industrial-technology/renewable-energy-technology-a-a-s/
[iv] IW Wind Turbine Technician Diploma. June 17, 2021, https://www.iwcc.edu/academic_programs/industrial-technology/wind-turbine-technician/
[v] IWCC Solar Installation Technician. June 17th, 2021, https://www.iwcc.edu/academic_programs/industrial-technology/solar-installation-technician/
[vi] Wind Energy in Iowa. June 18th, 2021, https://windexchange.energy.gov/states/ia#turbine
[vii] 2020 Iowa Energy Fact Sheet. June 18th, 2021, https://www.iaenvironment.org/webres/File/2020%20Iowa%20Wind%20Energy%20Fact%20Sheet.pdf
[viii] Economic Modeling Database. June 18th 2021.