

# SMALL BUSINESS INNOVATORS: ON THE CUTTING EDGE OF ENERGY SOLUTIONS

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SUBCOMMITTEE ON AGRICULTURE, ENERGY AND  
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COMMITTEE ON SMALL BUSINESS  
UNITED STATES  
HOUSE OF REPRESENTATIVES  
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## **SMALL BUSINESS INNOVATORS: ON THE CUTTING EDGE OF ENERGY SOLUTIONS**

**THURSDAY, APRIL 26, 2012**

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON AGRICULTURE, ENERGY AND TRADE,  
COMMITTEE ON SMALL BUSINESS,  
*Washington, DC.*

The Committee met, pursuant to call, at 10 a.m., in room 2360, Rayburn House Office Building. Hon. Scott Tipton (chairman of the subcommittee) presiding.

Present: Representatives Tipton, Bartlett, King, Critz.

Chairman TIPTON. The hearing will now come to order. And I would like to thank each of our witnesses for being with us here today to take time from their busy schedules. And we do look forward to your testimony.

Today we are going to examine innovative ways that small businesses contribute to energy production. Specifically, we are going to look at advanced biofuels such as cellulosic ethanol and new innovative technology companies that have developed to produce energy from previously used materials. We are also going to look at the role of research and development in spurring innovative technology.

Today's topic is one of significant importance for our nation. As we all know, energy is critical to our economy. Economic prosperity in the United States is closely tied to the availability of reliable, affordable energy supplies. This is not a new issue. The way we discuss it, however, has changed. In recent years we have seen energy prices skyrocket. You only need to look at the sign at your local service station when you fill your gas tank or read the bottom-line on your home heating and fuel bills to see how much more we are paying for energy now compared to just 10 years ago. This puts tremendous strain on American families and small businesses. In order for us to take steps forward, we must reduce our dependence on foreign sources of energy and develop new homegrown energy solutions right here in our home communities.

That is why this hearing on innovative energy solutions is so important. I do not believe that the search for new energy sources should be a zero sum game when we foster one industry to the detriment of another. Our economy is driven by energy and we must take a balanced approach to exploring ways to meet our energy needs. That means looking for ways to increase production of everything we need, including oil, natural gas, and coal, in addition to renewable energy like advanced biofuels, wind, and solar energy.

As has been shown in almost all industries in the United States, small businesses can be the catalyst that drives innovation to new and better technology. New technologies harness energy that we did not have the capabilities to be able to utilize before. There are many exciting developments in the biofuel wind, solar, and hydroelectric industries.

Colorado is a national wind energy leader and has lots of small businesses who are finding innovative ways to be able to be successful. One of these Colorado small businesses employs 24 people and is leading the way in direct, dried generator technology for wind turbines, which I understand will be more reliable, more efficient, lower rate, and lower cost than competing technologies and will reduce the cost of energy. Having said that, businesses in the wind industry are not immune from the same challenges faced by other businesses, and one of the biggest complaints that I continue to hear from wind energy developers is the need for certainty from the federal government. Vestas, which is a major employer in my district, has warned that it could lay off as many as 1,600 Colorado workers and wind project developers have essentially put their plans on hold until the federal government acts.

Wind is critical to the “all of the above” energy approach. And I believe Congress must provide certainty necessary so that this industry can continue to have economic growth and protect American jobs. I will continue to support these jobs and push for this timely solution. The advancement of new technologies moves us towards an “all of the above” energy policy and greater energy independence that grows our economy and is able to create American jobs.

Just last week I introduced H.R. 4381, Planning for American Energy Act of 2012. This legislation represents a true “all of the above” energy plan that embraces all of America’s vast energy resources. The bill strengthens our energy security by requiring the Secretary of the Interior to be able to develop a strategic plan every four years on how to responsibly develop our federal onshore energy resources, including oil, natural gas, coal, wind, solar, hydro-power, geothermal, oil, shale, biomass, and other minerals so that we can meet the needs of the United States’ energy needs. We live in a country with tremendous natural resources, and firmly believe that we can responsibly develop alternative sources of fuel along with our more traditional sources, and I believe that this legislation will help foster that development.

Again, I would like to thank each of you for taking the time to be able to be with us here today. I look forward to hearing your testimony and I now yield to Ranking Member Critz for his opening statement.

Mr. CRITZ. Thank you, Mr. Chairman. And thank you, gentlemen, for being here.

In the last year, energy prices have been predictably unpredictable. Since October, oil prices skyrocketed from \$80 per barrel to \$110 resulting in higher costs at the pump. With a gallon of gas near \$4, alternative energy sources have again become critical and in many regards it is small businesses that are leading the way. Whether it is developing renewable biofuels or creating innovative technologies, entrepreneurs are essential to our nation’s energy future.

Across the country, small businesses are working to develop new energy sources and rethink existing fossil fuels. As a result, these firms have become agents of change in the energy sector, generating new ideas and the jobs that come with them. Perhaps another area our small firms are as critical as they are in the biodiesel sector. An overwhelming number of its production facilities are true small businesses, as approximately 90 percent meet the definition of a small producer.

Since 2005, the 3.4 billion gallons of biodiesel produced in the U.S. have displaced an equivalent amount of imported diesel fuel. Not only does this reduce our dependence on foreign energy sources and decrease greenhouse gas emissions, but it also supports nearly 40,000 jobs.

Another area where small firms are playing a key role is in the development of innovative technologies related to traditional energy sources. This is clearly evident with regard to natural gas exploration. Shale gas, in particular, has created new jobs for local drilling service companies and regional heavy equipment companies. As they grow, so do the local economies they are located in, creating demand for restaurants, hotels, and other service companies.

Today, I am looking forward to hearing how we can support these businesses. To ensure that progress continues on all of these fronts, we have to make certain that policies are in place to support small firms and their research, whether they are family farms harvesting the raw materials for biodiesel or their manufacturing partners. It also means continued investment in research that will ensure traditional fossil fuels can be used in an environmentally efficient and friendly manner. Determining the proper mix of these policies is often challenging, and that is why today's hearing is so timely.

I am also looking forward to understanding what barriers these innovative companies are facing, as well as determining if government should play a role or simply get out of the way. In some energy sectors government action has been useful, while in others it may have been less so.

In this regard, small business challenges are our challenges, and ensuring that they continue to play a pivotal role in the energy industry is vital. The reality is that the more domestic options we have for energy, the better for everyone. With all of these alternatives on the table, the U.S. is better positioned to reduce its dependence on foreign oil over the long term.

Today it could be biodiesel and ethanol, natural gas, and soon clean coal. No one has a crystal ball and our energy needs will surely grow, so it is essential that we diversify our energy supply as much as possible.

Entrepreneurs remain at the forefront of these changes, not only as consumers but as researchers, developers, and innovators. This role is natural for them, and I look forward to hearing about the inroads they are making in this critical area during today's hearing.

Again, I thank you for being here. Thank you, Mr. Chairman. I yield back.

Chairman TIPTON. Well, thank you. And I would like to take a moment to be able to explain our timing lights for you. You will each receive five minutes to be able to deliver your testimony and the light will start out as green. When you have one minute remaining the light will turn yellow, and finally it will turn red at the end of your five minutes and you will be escorted out if you exceed that. I am kidding. We will certainly let you wrap up your testimony.

**STATEMENTS OF RALPH TOMMASO, CEO, GREENWORKS HOLDINGS, LLC; JERRY TAYLOR, PRESIDENT AND CEO, MFA OIL COMPANY; MICHAEL McADAMS, PRESIDENT, ADVANCED BIOFUELS ASSOCIATION; MATT HUGHES, BUSINESS DIRECTOR DEVELOPMENT, ENVIRONMENTAL TANK AND CONTAINER, JWF INDUSTRIES**

Chairman TIPTON. So I would like to start out introducing Mr. Ralph Tommaso. He is our first witness. He is CEO of Greenworks Holdings, LLC, in Windgap, Pennsylvania. After graduating from the New York University, Ralph began his career in the Chicago Mercantile Exchange and later as a restaurateur. When he saw what was to become of the waste that was generated at the restaurant, he researched and developed a better way to be able to utilize that waste and created Environmental Energy Recycling Corporation. EERC, a member company of Greenworks Holdings, LLC, gathers biological waste, fat, oils, and greases from the food industry and transforms it into clean burning biofuels to promote a healthier environment and to be able to promote America's energy independence. Last year, EERC combined with a similar company in Lehigh Valley, Smarter Fuels, and created Greenworks, LLC. Thank you for being here, Mr. Tommaso, and if you would like to give your testimony.

**STATEMENT OF RALPH TOMMASO**

Mr. TOMMASO. Thank you. Good morning, Chairman Tipton, Ranking Member Critz, and other distinguished members of the Committee. Thank you for the privilege to address you guys today.

My name is Ralph Tommaso and I am the CEO and co-founder of Greenworks Holdings. My partner, Dave Dunham and I are very proud of what we have built. A little over a year ago we had 30 employees primarily in Pennsylvania, and today we have 153 employees in the Northeast and the Southeast. When Dave and I each began our companies in 2005, we set out to change the way fat, oils, and grease wastes were used in this country. We envisioned waste being diverted from the animal feed industry and into clean burning energy to fuel America's economy.

In 2004, I read a study produced by the University of Georgia which proved that cooking oils and animal fats were superior fuels to Number 4 and Number 6 oils when used in industrial heating applications. Moreover, the emissions were low with waste greases when compared to Number 2 fuel oil, especially with regards to sulfur and CO<sub>2</sub> emissions. The study results motivated us to continue to refine our process, and by 2006 we were selling our recycled vegetable oil and biofuel based to two New York City skyscrapers. Our

biofuel products are approved by the U.S. Environmental Protection Agency under their renewable fuel standard.

Our growth is dependent on feed stocks that we procure. The thought that the United States consumes over 18.5 million barrels of oil per day is daunting to an industry as new as ours. In 2010, we found an uncommon source. Millions of gallons of degraded fats and oils in solid form, or what we like to call the biofuel equivalent of the Canadian tar sands. Catfish Processing Facilities design and build football field-size retention ponds to collect and process their wastewater. This water generated when the plant is washed and sanitized daily catches all the small pieces of fats and solids that are left over in the filleting process. Over a period of years, this fat accumulates on the surface of the ponds.

Upon a long, competitive battle with other biofuel and rendering companies we were awarded 100 percent of the bids for this accumulated fat or a total of 10 ponds with up to 60 million gallons of regenerating feed stock, kind of a gift that keeps on giving. And that was the easy part. And now we came to the intensive process of extracting the fats and oils and turning them into one of our usable finished fuels.

What we did next reminds me of one of those final tables at the World Poker Tour where the guy goes all-in with a pair of sixes. Not only did we need to put together the logistics and the colossal excavating equipment necessary to harvest the ponds, but we built two plants, one in Alabama and one in Mississippi to process all that material locally. Each plant was designed to process 20 million gallons per year from material that was the consistency of dirt. Using heat, pressure, and mechanical separation—these were technologies that we adapted from our other plants, as well as some tricks that we learned from the petroleum—we were able to produce a biofuel that has superior performance characteristics to current industrial heating oils. Leveraging our plants and employees, we also recently began collecting used cooking oil from the area restaurants as well, signing up 250 new accounts in our first month and paying them for a waste product that they used to pay somebody to take away.

By teaming up with the catfish industry, our efforts have revitalized two southern towns with double-digit unemployment. Greenworks has provided over \$4 million to the construction trade during the last six months and hundreds of jobs have been saved in the catfish industry through our harvesting of the oil. We have brought hope to a depressed area that was starving for work and thirsty to get behind an industry that sustains itself over the long term.

We deal with ever-changing regulations around our product and its applications which cause us concern not only for the success of our company but for the people that believe in us. In an effort to participate in the regulatory and legislative process, we have members of the Advanced Biofuel Association led by Mike McAdams to my right, and are represented directly by Connie Lawson. The RFS2 program was written with just transportation and home heating oil in mind. We recommend that it be expanded so that such biofuels like ours may be used in manufacturing and large-scale heating as well. Manufacturing industries use petroleum

products and many facilities need to reduce their emissions given new EPA regulations. Biofuels represent a potentially cost effective way for the manufacturing industry to reduce harmful emissions, thus saving manufacturing jobs while simultaneously creating and preserving jobs in the biofuel industry.

I thank you for this opportunity to share our ideas and innovative efforts at Greenworks Holdings.

Chairman TIPTON. Thank you, Mr. Tommaso.

Next up is Jerry Taylor, president and CEO of MFA Oil Company and co-founder of MFA Oil Biomass, which is headquartered in Columbia, Missouri. The goal of MFA Oil Biomass is to create a vertically integrated renewable energy supply chain by combining MFA Oil's knowledge of the energy industry in markets with farming knowledge with its cooperative members. A native of Omaha, Nebraska, Jerry received a bachelor of science in marketing from the University of Missouri in 1969. After serving with the U.S. Army, he spent six years in the banking and brokerage business. He then returned to Missouri as the owner/manager of a chain of convenience stores. Jerry joined MFA Oil in 1982 and served in several capacities before being named president in 2003.

Welcome to the Subcommittee, Mr. Taylor. And I look forward to your testimony.

#### **STATEMENT OF JERRY TAYLOR**

Mr. TAYLOR. Thank you, Chairman Tipton and Ranking Member Critz and the members of the Subcommittee. Thank you for the invitation to testify today.

I am Jerry Taylor, president and CEO of MFA Oil Company, a farmer-owned energy cooperative in Missouri with 40,000 members. MFA Oil supplies fuels, lubricants, and propane to customers in seven Midwestern states.

Our cooperative has a long history in leading renewable fuels innovation. Starting in the 1960s, MFA Oil produced gasohol. Most recently in the early 2000s, we ventured into the biodiesel production, and in 2008, we began writing the next chapter of our renewable energy story, Biomass.

In 2011, we took a major step forward and partnered with Aloterra Energy to form MFA Oil Biomass, a separate small business with the mission of leading the cooperative into this new, renewable energy field. Critical to this, as with anything we do, was to gain farmer trust and support. To ease their concerns and gain commitment, we realized that we needed to become experts in each area of our own supply chain. We are utilizing our existing knowledge in farming, energy, and commodities to form a vertically integrated renewable energy supply chain. The vertically integrated system provides farmers an energy crop source, unique harvesting and planting equipment for the crop's rhizomes, special harvesting services for the mature crop, processing technology and marketing services to get the best return for the farmers and the cooperative.

A key to success in any business is flexibility to respond to changing markets, so for us a versatile feed stock was critical. *Miscanthus giganteus* meets that need, not just as a viable feed stock but one with incredible potential. *Miscanthus* is a perennial grass that is noninvasive, drought and pest resistant, and needs

less fertilizer than food crops. This translates into less runoff into the water system. The target farm is margin or underproductive land that is not used for row crop production.

At 10 to 15 tons per acre, Miscanthus more than doubles its nearest competitor in tonnage. Each ton contains about a million and a half BTUs, which means at full maturity each project area can produce enough energy to power 65,000 homes or 1.6 million barrels of renewable liquid fuels each year. One hundred seventy five farm families have dedicated acres to this new energy crop, and we anticipate this number will grow to over 1,600 as our projects scale up to maturity at 50,000 acres per region. In liquid fuel language, this would create a 20-year reserve of 93 million barrels of liquid fuel.

To avoid betting the farm on an unproven technology, we are focused on existing markets and technology, such as solid fuel pellets. We have developed a biomass furnace company and heating systems with 100 in operation today. Our future plans entail building biorefineries inside our biomass reserve areas that make multiple higher value products that each replace part of the barrel of oil. This allows a conservative approach instead of betting our future on the success of a specific conversion technology. Beyond the quickly developing liquid fuel and bio-based chemical markets, we are implementing a model using Miscanthus to assist small towns across the U.S. in complying with EPA, wastewater discharge measurements, as well as helping to reclaim mining lands.

It is hard to articulate just how difficult it was and still is to educate farmers on a strange new plant called Miscanthus giganteus. This was not an attempt to plant a known crop in a new industry but an unknown crop in a nonexistent industry. Add to that a crop that at the time was too expensive to plant and it was being planted by hand. And we are asking farmers to spend capital without a return on investment as the crop matures.

However, I believe our success thus far had a lot to do with the fact that we are a farmer-owned cooperative. As a cooperative, we are able to work hand-in-hand with producers, as valued trusted business partners, allowing farmers to boost their earnings from the marketplace and diversity their income streams. Our farmer owners see incredible opportunities as this endeavor takes off. They recognize the potential to offer rural communities permanent manufacturing jobs. A new cash crop for farmers, a local source for green heating, renewable liquid fuel sources, bio-based chemicals, green building materials, water treatment systems, soil reclamation systems, and consumer packaging.

Again, thank you for this opportunity to testify today and I will be glad to receive any questions.

Chairman TIPTON. Thank you so much, Mr. Taylor. I appreciate that.

Our next witness is Michael McAdams, president of Advanced Biofuels Association. Under his leadership, the ABFA is going to become an active partner with leaders in Washington as they work to transform our nation's energy policy by creating long-term renewable solutions that will create jobs and strengthen our energy security. Mr. McAdams has testified before Congress and the executive agencies and participates in a number of advanced biofuel

forms across the country. He holds a bachelor's degree from Virginia Polytechnic Institute and State University, and a J.D. from American University's Washington College of Law. Thank you for being with us today, Mr. McAdams. I look forward to your testimony.

#### STATEMENT OF MICHAEL McADAMS

Mr. McADAMS. Thank you, Mr. Chairman. Chairman Tipton, Ranking Member Critz. Congratulations.

Congressman Bartlett. I am honored to be with you this morning and proud to report to this Committee and to the Congress that America's domestic advanced biofuels industry has moved from the beaker to the barrel, all in record time. And like most part of our nation's economy small business and American ingenuity are proving to the engine driving our success. The Advanced Biofuels Association represents over 40 of our nation's and world's leading advanced biofuels and advanced feed stock producers. Our members range in size from large household names to small and medium-sized companies.

Since our inception, the association has advocated for a level playing field.

When it comes to public policies specifically calling for technology neutrality, feed stock neutrality, as well as parenting in the form of any government support. Washington should not be in the business of picking winners and losers. Many of our members specifically fit within the definitions of a small business found under the current law. In fact, I am delighted to be appearing with one of our members on the panel day. Mr. Ralph Tommaso of Greenworks Holdings, a company who is delivering renewable advanced gallons today.

The association represents a wide range of technology platforms from Synthetic biology and hydroprocessing to gasification to name just a few.

Our members are working on developing a wide range of feed stocks. Some are planning Giant Miscanthus, sugar beets, and creating cellulosic sugars from woods, grasses, and municipal solid waste while others are planning new forms of trees and growing algae to produce agricultural grade oils for refining. The challenge for all companies large and small is to build and deploy first of kind, no innovative technologies, which produce these new advanced biofuels. In order to be successful, these small business owners must manage the technology scale-up risk, the volatility of commodity prices, and the certainty of regulatory policy.

Before we discuss policy, let me start today by sharing some of the biggest successes we have occurred over the last year. The Air Force has flown the F-16 Thunderbirds on a mixture of advanced biofuels. And the Navy has tested the advanced biofuels and ships and vehicles. The commercial sector has flown the first cross-country flight on a blend of renewable jet fuel.

We have one member, Dynamic Fuels, producing a million gallons of renewable net and renewable diesel a week and have five members who have gone public. In addition, Colorado member companies, are preparing to deploy their innovative technologies this year. Gevo will produce an isobutanol, a drop-in fungible fuel. They

will commission its 18 million gallon plant in June in Luverne, Minnesota, while Sundrop Fuels is on target to break ground to build a 50 million gallon cellulosic gasoline plant in Louisiana. As you can see from our membership base, there are significant opportunities to create jobs in rural American, both from the growing of the feed stocks to the deployment of the plants.

To your point on innovation, we are seeing new fuels that can be blended in new ways with existing products; the opportunity to make new bioproducts and the possibility to grow new feed stocks which are more sustainable and more productive than the existing options. These hold the ability to create an entire new set of opportunities for farmers and land owners.

Mr. Chairman, turning to policy, as you recognized in calling this hearing, there are significant numbers of small business people involved in this sector. Several of our members welcome the opportunity to participate in various small business administrative programs which we call for matching funds and leveraging. One member company has been able to leverage the pre-engineering cost with a matching contribution in assisting in the building of a plant in Florida. That is a \$150 million plant that is going up.

Unfortunately, other companies have been unable to utilize the Small Business Administration's funding options as they have utilized large partners who are supported by venture capital organizations of scale. I have been told this prevents them from being able to access most of the funds available.

Earlier I spoke about regulatory certainty. Nothing more important to small business owners and innovators than a consistent long-term policy frame from which to build a business. For our sector, the single most important component is the renewable fuel standard passed overwhelmingly in 2007 by a bipartisan Congress and signed into law by President Bush. Although it is not perfect, it is fundamentally important that the Congress continue to send a strong bipartisan signal of support if we wish to continue the remarkable progress and growth of an advanced biofuels industry.

As for tax policy, it has been a mixed bag at best. Many of the existing provisions have already expired and some are crafted in such a manner that they are not helpful to small business or create an uneven playing field across the entire sector. As you know, all of these are complicated by the current record of renewable and have been on a piecemeal basis for a number of years. This simply does not provide certainty on which to build a business.

I want to thank you for allowing me to be here, Mr. Chairman, and I look forward to answering any of your questions.

Chairman TIPTON. I would now like to yield to Mr. Critz to be able to introduce our final witness.

Mr. CRITZ. Thank you, Mr. Chairman.

Matthew Hughes is the director of business development for Environmental Tank and Container, a subsidiary of JWF Industries in Johnstown. It manufactures frac tanks, mud tanks, flowback tanks, and impoundments for oil and gas companies. It now employs 450. Is that right?

Mr. HUGHES. No. Eighty.

Mr. CRITZ. Eighty. Okay. Eighty individuals and occupies a total of 800,000 square feet of manufacturing space. It is part of JWF

Industries, which has humble roots as a two-man operation run out of a garage and now has successfully grown into a company with six locations, five of which are located in Johnstown. Oh, I see. It is 450 employees across all companies; I gotcha.

Mr. HUGHES. Correct.

Mr. CRITZ. Recently, this success was noted by PA Business Central, which recognized it as a top 100 organization. Matt, welcome, and I look forward to your testimony.

#### **STATEMENT OF MATT HUGHES**

Mr. HUGHES. Chairman Tipton, Ranking Member Critz, and members of the Subcommittee, thank you for the opportunity to testify today. My name is Matthew Hughes. I am the director of business development with Environmental Tank and Container. Going forward I will refer to our company as ETC.

I would like to start off by saying that our CEO, William Polacek, would like to apologize for not being able to attend today's hearing.

Located in Johnstown, Pennsylvania, ETC occupies a 160,000 square foot building currently shared with our subcontractor, United Industrial. This property was originally a World War II era munitions factory, later transformed into a railcar factory, and now houses our operations. Officially opening just over 11 months ago, ETC, like many small business start-ups in the oil and gas industry, owes its existence to shale energy. Each time you come across a success story like ETC's which was born in the shale boom, you will find many other companies like United Industrial that are getting a second chance at life. United, once tied exclusively to the commercial fabrication market, fell victim to the economic downturn of 2008 and was forced into bankruptcy. Shale energy blew life back into the almost shuttered plant which had three workers in May of 2011, and was up to 80 by year's end. Employing everything from engineers and welders, project managers, and sales people.

Shale energy is a rapidly changing industrial with plenty of room for growth. Back in 2006, our president and CEO, William Polacek, investigated business opportunities within the Marcella shale. It felt like there may be opportunities down the road but did not see a good fit at the time. Like many good entrepreneurs, he believed his hunch and kept his eye on the young industry waiting for his opportunity. It came in 2010 when some of the larger exploration and production companies announced that they were converting their Marcellus operations into a closed-loop system. The new protocol changed the method used for containing drilling waste and also outlined best practices for onsite water storage. Both initiatives created the demand for portable steel storage containers, and because the ETC was a nimble, small business, it was able to quickly respond to those needs. ETC answered the needs when the market asked for reliable, durable, frac tanks that were leak-free and capable of withstanding the rough terrain in cold winters in Pennsylvania. ETC answered the need when drilling contractors had to store all on-site drilling fluids in tanks instead of earth and land pits. ETC answered the need when drillers, already slowed down by a multitude of time-consuming permitting procedures,

asked for a portable above-ground water impoundments that did not require soil disturbance permits. And we are proud to say that we are answering the call again, this time in the design and development of onsite treatment equipment that reduces the amount of frac fluid that is hauled offsite for disposal.

While ETC can be credited for some innovation in our industry, we must also give credit to our customers, many of which are independent owner-operators of oil field service companies, equipment rental firms, and engineering groups. They were first to see the need and come to us with their ideas. By virtue of opening our doors, we have created a means for many others to spur innovation and growth. Mr. Polacek always reminds us that we will be building things a year from now that people have not invented yet.

Recently, most businesses that served the natural gas portion of the shale industry are facing a common obstacle. The price of natural gas is now too low relative to what it cost to extract it. When you visit a natural gas well pad, attend an industry trade show, or speak with customers about future orders, the same concern arises. How will this industry continue to grow and prosper if the price of natural gas stays as low as it is? And what is frustrating to us as small businesses is that we cannot fix that issue with our hard work, innovation, and resolve. The fix lies in creating and mandating demand.

In closing, I ask the members of the Subcommittee to be mindful of the young start-up companies, the once bankrupt businesses that are rising from the ashes, and the multitude of small businesses that rely on shale energy for their livelihoods, and to consider looking into what you can do as policymakers to help increase the demand for natural gas as a cleaner fuel option for our energy sector and a cleaner fuel option for our transportation sector.

Chairman Tipton, Ranking Member Critz, and members of the Subcommittee, thank you for working together in a bipartisan manner to help small businesses succeed, help fuel job growth, and to help our nation become more energy independent. Thank you.

Chairman TIPTON. Thank you, Mr. Hughes. I appreciate you all staying within the time. We would not really have dragged you out. So, but we do appreciate that.

Mr. Tommaso, we will move on to questions now and I would like to start with you. A common theme across all industries that we hear about in this Committee is regulatory certainty and general confusion put forth in the form of government regulation. Can you talk a little bit about the regulatory process in your industry as well as the process on how some of these new fuels are categorized by the EPA?

Mr. TOMMASO. Sure. The first thing, when we started in 2005, that was first when the biodiesel subsidy came out where it was a 50 percent per gallon production credit for biodiesel made from second use oils and a dollar for the virgin oils. And in any new industry, as it builds traction you are building the customer on a one-off basis and the way Mr. Taylor talked about building the trust with the farmers, we build the trust with our customers that this fuel is going to be here when we make the conversions to switch over from petroleum to biofuels. The uncertainty and the changes in the policy affect us because as we produce this fuel based on cer-

tain circumstances and certain economics, when they go away we have to go away or either subsidize—basically fund those subsidies until or if they do come back. And that ends up causing a lot of disruption to us. Supply chains, supply flows, and we have a large logistics arm. Five million gallons worth of storage, 60 tank cars that drive around the country on a daily basis. So when all of a sudden those subsidies go away and those customers are looking for product to be priced competitive and the economics change overnight the way they have done since 2006 on and off, it does affect us very drastically.

Chairman TIPTON. How does the EPA categorize the fuels you produce?

Mr. TOMMASO. Currently, we are classified as an advanced biofuel, a D5 RIN over the—since the program's inception in July of 2010. The rules changed twice and again reclassifying us twice and changing the value of our RIN. And again, this has also caused a big disruption to our market.

Chairman TIPTON. So changing oils, when the EPA does that—

Mr. TOMMASO. No good.

Chairman TIPTON [continuing]. That is hurting your ability to be able to grow the business?

Mr. TOMMASO. Absolutely.

Chairman TIPTON. You need some certainty in there.

I am curious as to the role that the federal government's research and development efforts have on your business. What is that community like in terms of the R&D and does it work in partnership with small businesses?

Mr. TOMMASO. We have had very little experience with state-run R&D or government-run R&D programs. We do a lot of all the R&D ourselves. We did employ Penn State to do a private study for us, as well as we have chemical engineers that we employ that used to work in the petroleum industry that came on with a lot of industry secrets that helped us to make a better fuel.

Chairman TIPTON. How about you, Mr. Taylor? Are you using state and federal government R&D?

Mr. TAYLOR. Yes, we are.

Chairman TIPTON. Okay. Mr. McAdams.

Mr. MCADAMS. A lot of my members are.

Chairman TIPTON. Okay, great.

Mr. Tommaso, I am intrigued a little bit by the work that you are doing with these catfish hatcheries, to be able to skim off the fat that is there. Where does an idea like that come from?

Mr. TOMMASO. Oh, that was interesting. We had some sales guy that came out from Louisiana that had access to one pond and he was very undercapitalized, did not know the technology, and did not have a market for the product but had an inside track and saw it and went to the plant owner and told them about its possibility but did not have the means to extract it. And then when interest started to develop over this one pond, we were the only ones that had the ability to harvest it, process it, and actually find a market for it. So that is when we sent a team down there to develop that market and bid on all those other 12 ponds. And we did some experimenting. At first we pulled loads off the pond in a very crude manner, trucked them back to Pennsylvania, processed them down

in Pennsylvania, and then sold them back to Texas into the Houston field market. And then from there we developed the whole business development of going down there and going after all the 12 plants.

Chairman TIPTON. Great example of American entrepreneurialism. You did not have a bureaucrat out of Washington, D.C. come down and say we have a great idea. This actually came out from the working area.

Mr. TOMMASO. Yes. There was a mechanical contracting company that went out of business a couple of days before we got down there and there were 60 guys ready to start manning excavating equipment, trucks, welding. It was an excellent opportunity.

Chairman TIPTON. Terrific.

Mr. Taylor, can you explain a little bit about the differences of creating biofuels for transportation and biofuels for electrical generation?

Mr. TAYLOR. As far as biomass is concerned?

Chairman TIPTON. Right.

Mr. TAYLOR. The difference, at least the approach that we have taken, is to produce the biomass is sort of the first thing we had to do. And we're actually creating a number of paths with relationships both towards cellulosic, which would take the crop in some form or fashion into their process or densifying it into pellets, but more of almost a biomass, kind of a bio refinery. Some of it could be building products and other things but those channels we see as—we have a multiple of channels that we are putting in play to be able to maximize the value of the crop, which is the number one thing as a farmer-owned cooperative we are trying to do. Does that answer your question?

Chairman TIPTON. Yes, I think that gets to it. And just kind of going back to the catfish, because we have heard of being able to take French fry oil and be able to operate a vehicle, are you doing some experimenting with that? You mentioned using it for heating.

Mr. TOMMASO. I originally came out of the restaurant business in New York City where there is a large heating oil—industrial heating oil number 4 and number 6 market. My partner, Dave Dunham, started in the trucking industry. He actually started collecting used cooking oil and converting his father's tractor trailers to run on vegetable oil to lower the gas. In the long term, running raw vegetable oils in transportation is not a viable option. We developed the market to run large industrial applications, power plants, universities, as well as district heating plants to run on our fuels.

Mr. MCADAMS. Mr. Chairman, if I could come back and kind of tie that question with your first question. I am going to get in the weeds just a second because I think it makes the point that both of these gentlemen are trying to make. So, for instance, if he tries to use a hardwood to make pellets or to make biopower, he has no problem. But if we go into the transportation fuels industry and we want to build a half a billion dollar cellulosic plant and make a drop-in renewable jet fuel from wood, the definitions under the RFS are incredibly prescriptive. If Ralph wants to take his catfish oil, he has to have a determination from the EPA that specifically says it is a waste.

Now, this is a problem. This is a term of art, waste. What is a waste? Well, waste is something that has no value. So as I try to certify fuels on behalf of my 43 different members, every single feed stock has to go under the RFS and be determined whether it is certified under the law, which means many of his feed stocks have had to be singly submitted for their greenhouse gas reductions, the only law in America that regulates greenhouses gases for each of the four categories. And if the EPA does not determine that his molecule is a pure hydrocarbon molecule, then he is not a D\$ RIN; he is a D5 RIN. And the difference is a buck. Now, that is a big difference.

So the devil is in the details here. And in defense of the EPA, the statute was prescriptive in some way when we originally wrote it in 2007, and that is because candidly the incumbent industry had been around longer and people understood it. I am not criticizing the incumbent industry, but as we move forward, one of the challenges for our association and for all the guys sitting at this table is to have a level playing field so all of these different molecules can come in and lower the cost for the American driving consumer, whether it is diesel, jet, or gasoline. And we still have impediments in the regulatory structure that we are working on today. And I am hoping that we can get some of these rules through R&D, such as the heating oil rule that would expand the market for Ralph, or the commingling rule that would allow the Colorado butanol company to deploy his fuel which he cannot now. Those are the kinds of things I think that you are trying to drive it.

Chairman TIPTON. I appreciate those comments.

Mr. Taylor, in regards to some of the federal research and development efforts, are they being focused in the right areas?

Mr. TAYLOR. The areas that we have participated in are very specific. The state of Missouri through a small business rural, small business grants was a study, for example, done on which energy crop would be the best for Missouri. We were the lead on that study. Miscanthus was the chosen crop and we have had two studies since that point. So we have utilized three different studies sponsored by the State of Missouri Small Business Administration.

Chairman TIPTON. Good. Mr. McAdams, there seems to be pretty rapid breakthrough in technology in a variety of different fields that are out there. You were just speaking to it a bit but could you estimate where most of these innovations have come from? I think you spoke to it just a second ago.

Mr. MCADAMS. The private sector.

Chairman TIPTON. It is all the private sector?

Mr. MCADAMS. It is private sector. Now, I will say I was the keynote speaker at NREL this year. Very talented group where the government has a good facility and a consortium they built at the Department of Energy to try to help lower the cost of testing different enzymatic reactions. And that has been helpful. I think there are 38 members of the consortium. But a lot of this is privately financed. And a lot of these guys have been at it for five years. What I am really proud to say is when the private sector focuses on innovation and they are trying to make a dollar at it, they do it real quickly and they do it economically efficient. And so that

is why it is so important that a framework like the RFS or a tax code if you choose to have one is neutral and lets a level playing field so we can raise the capital to actually fund the targeted R&D that each of these technologies need.

Chairman TIPTON. Going back to your previous comments, would you be recommending that Congress play a more vigorous role in terms of oversight of the EPA in terms of having common sense regulations that are coming into play?

Mr. MCADAMS. I think it is always a good conversation that the executive agencies have with the U.S. Congress. Over my tenure in Washington I found that the dialogue actually helps focus the mind and that it brings an opportunity to really ask questions. Sometimes in the legislative process we do not have the time to get into some of the weeds and what we have done constitutionally is we have delegated a lot of these specific decisions to the agencies. And I think it is really important that Congress have a very vigorous and active role in making sure that the statutes, their content and their intent is met. And I like that dialogue personally. So I would encourage you to do that and I think there are a lot of opportunities to expedite the deployment of these technologies through that dialogue.

Chairman TIPTON. The renewable fuel standard has been set at 36 billion gallons of biofuels to be inserted into the transportation fuel pool by 2022. Is that a realistic goal?

Mr. MCADAMS. I think that it was a very optimistic stretch target. And so what we see is the flexibility that was built into the statute. I commend the Congress for the flexibility they built in with the off ramps. What you have in terms of specific application now of the statute is you saw, for instance, the cellulosic pool number was lowered over 90 percent in 2011. The pool was also lowered over 90 percent in 2012, and they are getting ready to make a recommendation in 2013. This has been an incredibly difficult economic market and the economic market did not match up with the stretch targets that were put in the statute. So I now have many members that are planning to bring to market. We are really beginning to see some of the cellulosic sector come in and try to meet these mandates. What EPA has allowed to do is to gift some of those gallons into the advanced pool. A big question on whether they can gift it into the biomass-based diesel pool. I agree with the National Biodiesel Board that moving forward there is a great opportunity to raise the billion gallon ceiling on the biomass-based diesel pool. We could probably do upwards of two billion gallons between now and 2022. And if that is backing out foreign oil, I think everybody from the executive branch and the legislative branch ought to look at that and what opportunities you have to kind of move some of these buckets around.

Chairman TIPTON. Mr. Tommaso, Mr. Taylor, do you have any comments on that?

Mr. TAYLOR. I do, if I may, Mr. Chairman. I think there is another piece to it as far as some of the environment we have been in over the last few years. We have been refining, oil refining since 1939. We know the commodity pretty well. This economic vacuum over the last three or four years was also accompanied by crude oil reaching a high in July 2008 at \$147 and hitting somewhere in the

low 30s by the summer of 2009, gutted most, if not any desire to be in renewable and risk your own money. This belief now, one of the reasons—we are an 83-year-old organization—our belief and the reason we have entered it is because we believe that generally global BTU prices had gone to another level in general and consequently, lowered the bar, so to speak, for renewables; hence, we have entered it. It is, I think, paramount to let programs work. Now the environment is correct. If we come out of the sort of economic vacuum we have been in, global prices are up and likely to stay. It gives now the right environment if time is lent. And that includes the BCAP programs for biomass, which we implemented very successfully. It is a very good program. We believe our model is almost the poster child for success in that. It helped a farmer get over the hump while we made the investment in environmental assessments, equipment, processes, plants, all of those types of things. All of those things are now in play because of those two things—a recovering economy and a higher fuel of global BTU products. Let the programs work.

Chairman TIPTON. Mr. Hughes, I do not want to leave you out. Can you describe the new technology that is in frac tanks and elaborate on how these tanks can mitigate some of the fears and risks associated with fracking?

Mr. HUGHES. Yes, sir. I know for a fact that our facility, when we manufacture our tanks we do not differentiate on quality. Some of the same gentlemen that are welding on military vehicles are also welding on these tanks. So we practice the utmost integrity when we are working on them.

I think one of the bigger parts that needs to be understood is the oil and gas operators have implemented pretty much their own best practices, self implementing them, and have gotten away from a lot of the in-ground impoundments and have moved over to hard side portable tanks, which makes it a lot easier to manage the fluid through all courses of the operation.

Chairman TIPTON. You may well be aware in the West we have plenty of natural gas. We definitely need the jobs. As you know, we need to do it in a responsible way to be able to achieve that. With pricing that we have, we have got a real challenge. Do you see a pathway to be able to make the production of natural gas literally more viable in this country?

Mr. HUGHES. Well, as you know, in our section as Mr. Critz knows, the majority of the Marcellus sits over a dry gas and we are moving more west towards where there are fluids that come up with the actual dry gas. Most of these operators need probably about 500 barrels of fluids that come up with their gas production per day in order to offset the very low prices that are in place right now for the dry gas. But as far as a path, I believe that we need to really focus on base loading our energy sector to be able to use that gas to generate electricity. And I know that is what a lot of the larger oil and gas companies, Exxon for one, is forecasting out to 2030, that the majority of increase for natural gas will come from electric generation.

Chairman TIPTON. You know, you may not have seen it, it just came out in headlines this morning where an EPA official apologizes for they call it crucify oil companies. Is that going to give

some pause? Because it does need to be all of the above. We need all of these energy sources. Are we seeing an overreach again by the EPA?

Mr. HUGHES. I would say yes, sir.

Chairman TIPTON. Great. I concur. I would now like to yield to Mr. Critz for his questions.

Mr. CRITZ. Thank you, Mr. Chairman. Since the Chairman ended with you, Matt, we will start with you, and it is a pretty straightforward question I have. The innovation taking place in the gas industry has had a profound impact on Pennsylvania. Can you talk about how Bill Polacek and ETC are able to seize on these opportunities? What is it that you saw and how is it that you got into this business so quickly? I am thrilled to hear the Chairman talk about the gas that is in Colorado, because they need your tanks, too, but that is another conversation.

Mr. HUGHES. We will be visiting them soon.

Mr. CRITZ. But if you would, just walk through the process of how you ended up here.

Mr. HUGHES. Sure. We are a contract metal fabricator. Mr. Polacek has been in business since 1987. He started in a two-car garage and now employs close to 450 people. And our main facility, JWF Industries occupies just a little under a million square feet. Mr. Polacek is very entrepreneurial and did, as I mentioned earlier, keep his eye on this business. And when it first started there was not very much opportunity for metal fabrication. They dug a lot of pits. They lined them. They stored their water in the pits. They stored their drill cuttings in the pits. They stored their drill mud in the pits. Those have been highly—well, I do not want to say highly regulated but they have self-policed themselves, realized what they had to do in order to make things good and in order to proceed forward with the drilling operations and minimize the amount of environmental impact. When they imposed those, that is when we got involved and that is when Bill actually was able to seize the opportunity.

We are what we consider a mid-range producer. Most of the companies that we compete against are down in the Texas-Louisiana area and they produce in very high volumes. What we saw in the market was an opportunity to produce a very good quality product at a medium volume and then answer the needs to the innovations that are required in order to keep growing this business. So we had several companies come to us and ask us if we could customize a particular tank, tweak it, or actually help them design it to be more functional for what they do.

And as I mentioned, we are actually getting involved with one particular company. It was a great story. A very young engineer walked into our office and had a good idea regarding water clarification system in order to clean the residual frac fluid onsite which eliminates the amount of transportation, eliminates the amount of trucking, and also it eliminates the amount of water that is needed to begin the subsequential fracking processes. And it is that kind of innovation that we were open to. So that is basically what we are very well known for in the industry is our ability to adapt the innovation and be able to be flexible enough to work with some of the smaller companies.

Mr. CRITZ. You made me think of a company you need to talk to, but that is for another conversation. I remember talking with Bill, too, about the quality. You mentioned that your welders are doing military applications but they are also doing these tanks and that has also been part of your success; these tanks are top notch and there is no failure in any of these weld joints. Is that correct?

Mr. HUGHES. That is correct, sir.

Mr. CRITZ. Okay. Aquatech. Remember Aquatech?

Mr. Tommaso, I am absolutely astounded, baffled, interested in this catfish pond. I guess it's reclamation; I do not even know what you would call it. You say it is a football field size pond that has—I was looking through my paper because I was not sure if I heard it correctly—is the material that you want 3 to 10 feet deep or are the ponds 3 to 10 feet deep?

Mr. TOMMASO. No, the ponds are 100 feet wide by 300 feet long by 30 feet deep.

Mr. CRITZ. Thirty feet deep. Okay.

Mr. TOMMASO. And as they are sanitizing and washing down the plants every day they are using about three million gallons of water of which about two percent is fats and solids. Every day. So all that goes into this pond. The solids flow to the bottom, the water stays in the middle, and the fats rise to the surface. And over the course of approximately three years you have a cap on these ponds of 3 to 10 feet deep.

Mr. CRITZ. That is amazing. I am just trying to envision a football field with 10 feet worth of fat.

Mr. TOMMASO. When that salesman came to me with a jar of this fat and the odor was horrendous and it was a sight to see, and he was showing us pictures, it did not do it justice until you flew down there and were standing in front of this pond.

Mr. CRITZ. That is amazing. Now, have—you never been on that show "Dirtiest Jobs"?

Mr. TOMMASO. No.

Mr. CRITZ. I was listening to your testimony, and it really threw me because of the massive size of this thing. But the one question I do have for you is whether converting used fryer oil to biofuels is an old-fashioned process? Someone has to collect the oil from restaurants. How challenging is it to manage the collection process and keep your costs at a level that you are actually making money on this?

Mr. TOMMASO. We had the benefit of starting in other industries, so we came without any bad habits and we started with technology. And we currently have over 40 trucks that go out every day to restaurants. We collect from about 17,000 restaurants in 12 states. And we use UPS logistics. We use satellite technology. We use tablets in the trucks. We have live data knowing how much is in each truck, what the volume is. And we use this same technology that companies like UPS and Federal Express do to get this piece of paper across the country overnight for \$12.

Mr. CRITZ. Okay. All right.

Mr. TOMMASO. But is a massive undertaking.

Mr. CRITZ. Well, restaurants are dotted all over the place, so it must be massive just managing it.

Mr. TOMMASO. That is why these ponds are easy.

Mr. CRITZ. Yes, I guess once you have your delivery route or your pickup route it is just a route. It is just a truck route. Okay.

Mr. Taylor, you work with nearly 200 family farms and you anticipate scaling up to 1,500. Now, agriculture is still the number one industry in Pennsylvania, and there are a lot of small family farms. What are some of the benefits and challenges you face in working with so many of these family-owned farms?

Mr. TAYLOR. The MFA Biomass, which we own 60 percent and Aloterra owns 40 percent. Aloterra really brought the Miscanthus expertise, feed stock, and a number of other expertise. What we bring to the table is logistics. We are the seventh largest propane retailer in the country and we've started several companies.

Mr. CRITZ. And you do a sort of exchange; is that correct? You deliver propane and pick up the stuff that you need? Or is that not part of it?

Mr. TAYLOR. No. What we have done, just to give you an example, a real life example, southwest Missouri, it is big chicken poultry country. They have a group of growers. The average grower might have six houses, might use 20,000 gallons of propane in a year to heat those houses at \$1.60 per gallon approximately. Now that grower grows 15 acres on his farm of Miscanthus with a number of growers. We built a processing plant in the center to pick that up and pelletize it with our delivery trucks. We take it back and put it into the feed bin. We have a system for feeding it into the furnaces which we build now in southern Missouri. We build those furnaces. We have over 100 locations now. And his cost, we essentially can guarantee him a cost, the equivalent cost of about 80 to 90 cents a gallon of propane. About half of what he is paying now. And obviously a very small delta with energy input because all you are doing is harvesting it once a year. So it is truly the economic effect. And that farm, that means approximately close to \$20,000. And that is significant. The bottom-line effect turns out to be about \$400 an acre net profit improvement if they use Miscanthus.

Mr. CRITZ. Well, you said you are on the logistics side? So my next question was about the Department of Agriculture's biomass crop assistance program, and I think it has been important to the growth of your industry. Can you discuss where it would be if this funding source had not been available?

Mr. TAYLOR. Yes, I can. I call it prospectus. I think in the sovereign world we call it the ruling or whatever it is when BCAP came out. In the opening paragraph, when I read this the opening paragraph said we have the chicken and the egg problem. Farmers will not grow it because they do not even know the equipment to handle it; plants will not locate in the places because nobody is growing it. It was a chicken and an egg problem. What we witnessed first-hand with BCAP was an absolute resolution of that chicken and an egg problem. When we received BCAP funding for approximately 13,000 acres, our first 13,000 acres, and we are now just finishing up that planting process, there were a number of things we had to do. Most people that are in the rhizome business or the Miscanthus business want rhizomes as high as possible. We want costs as low as possible. So what we had to do is spend a year multiplying the rhizomes or a couple or three years. Multiplying

the rhizomes to get the costs down per acre from \$1,400. In our BCAP program we are at \$750. This year on the 2012 budget we hope to be at \$550. We hope in another year we will have driven that down to \$300 an acre to establish that. That would have been impossible without BCAP funding the bridge, getting the bridge for the farmer. Because the money did not come to us. The money goes to the farmer to plant the crop. It takes three years for it to mature, massive tonnage. So you have rhizome costs coming down.

On the other hand you have got to have time to develop the logistics. Two years ago all the rhizomes were planted with people on the backs of the wagons dropping rhizomes down chutes. MFAO Biomass has partnered with an English company. We are now making the planters in Kansas. Twenty-four of them are now off the line which we have purchased and are in fields planting plants. Four-wheel planter, five miles an hour, that is 40 acres a day per planter. That is doable and we think we can now grow when they grow so we are up to—we are going to be pushing 80. Keep in mind the industry just two years ago was at five acres a day with four people on a planter. So this is so new trying to work out those systems to get the efficiency—not just efficiencies—to ward out any system that will work is happening because BCAP was available.

The important thing with BCAP is it does not take just one year. The funding is critical to bridge the people that have already started on that path to get them to year two or three as it was originally designed, in three years to be able to let these things play out. Our game plan is absolutely to be on our own the fourth year. We needed three years of help from BCAP. We went from \$280 million or whatever it was down to \$17 million this year. And who knows. It is critical, we think, to bridge that gap for the farmer because it is an unknown entity at this point. We now have broken that chicken and egg problem because of BCAP.

Mr. CRITZ. Mr. McAdams, did you want to weigh in?

Mr. McADAMS. I just want to say it is one of the top priorities of the association. We represent Freedom, which is a giant *Miscanthus* grower out of Georgia. We are hoping to see them plant—

Mr. CRITZ. We represent Freedom, too.

Mr. McADAMS. That you do. They are looking at trying to do 30,000 acres. They are currently right now working with some folks. They actually have helped Aloterra in terms of their planting. Congressman Kingston was pivotal last year in putting some level of funding, 17 million, into the process for the BCAP program. I am not real optimistic in the House Farm Bill process but we are hoping this morning over in the Senate Farm Bill that they will restore a higher level of funding. It is key for us to have certified feed stocks, which these would be available to make the gallons. And it is a chicken and egg problem. I think he laid it out beautifully.

Mr. CRITZ. You have in your testimony, and I want to circle back around to something called *Miscanthus giganteus*, which is I think what we are talking about. Back in my part of the world there are people talking about something called switchgrass as a feed stock. What are you describing, and is switchgrass something that is in a temperate zone? I saw where you can grow this *Miscanthus*

giganteus in a wide range of areas. So can you explain to me exactly what that is?

Mr. MCADAMS. Sure. Well, let me say that the administration put together a biomass council to look at where you have various feed stocks available to support an advanced biofuels industry. And the conclusion of that was you could grow different feed stocks in different areas and it was not a one size fits all model. And so one of the great things about giant Miscanthus is you can grow this in subgrow crop land. So kind of loamy soils that you would not grow corn or cotton or anything else on. So you can take unproductive land and you can turn that into a real high-yield crop on a per acre basis. If you look in Oklahoma, switchgrass was a natural field grass in Oklahoma. If you look in Colorado, you have got a lot of beetle kill. So if we could get the definitions right in terms of what woods we could use, my, what a tremendous opportunity you would have to deploy cellulosic plants in Colorado.

So I think this is one of the areas as we look moving forward, this is one of the areas we could probably do a little better fine tuning, particularly regulatorily as we move forward.

Mr. TAYLOR. We use a specific clone called the Illinois clone, which is a sterile plant. It has no seeds. It is noninvasive. Because we are farmers, we understand our rows or any number of other plants that have been invasive, we felt that was a critical thing, to be noninvasive. So it is a sterile, nonseeded plant. We had to prove that in our EA under NEPA when we did that. One of the reasons that crop is number one is its tonnage. One of the reasons it was not done is because you are planting with rhizomes. And now that we have solved a pretty good share of the problems with the handling of the rhizomes, propagating, digging them up and doing it, that cost is what has come down significantly.

Mr. CRITZ. Good. Mr. McAdams, you testified or in your testimony you discussed the benefits but also the challenges with using SBA investment programs. How important is equity investment and venture capital to the future of renewable fuels?

Mr. MCADAMS. Well, obviously, it is very important. Let me just start there. But let me say it depends on where the company is in its cycle. So if I am a new company coming into the market for the first time, probably the VC world is pretty important. And again, if you look at some of the more successful, more known companies in this space, they came out of the VC industry. Some of the smaller ones that are not at that stage, I think the Small Business Administration could really help them specifically in the SBIR programs, some of the research and develop monies. I was really delighted to get the example for this hearing today about the pre-engineering cost. This is a guy with less than 10 employees that has a very novel technology that they are trying to deploy in Florida, and that helped him leverage what is about to be a \$150 million facility. The loan was \$3.5 million. It came out of the state program from the 2010 funding out of SBA.

So I think it is a combination of things. And it really depends on what is the size of the company. Obviously, companies like DuPont have a different way to finance things than Ralph Tommaso. So I see them all in all sizes and again, it is not one size fits all.

Mr. CRITZ. Well, you mentioned something earlier about D4 and D5, and you are talking a different language to me. So at some point I want you to come in and talk to my staff about what that is so that I have a better understanding of it.

Mr. MCADAMS. I would be delighted to do that.

Mr. CRITZ. And just one closing comment. It is great to hear all of this because our subcommittee is Ag and Energy, so it is really interesting to hear everything that is going on. I was at a Steel Caucus hearing in Pittsburgh last week and we were talking about the price of natural gas. It is \$2.20, \$2.30 right now, but the natural gas industry says that once the LNG plants are up along the border and we start exporting, then it is probably going to hit about \$5 to \$6 a cubic foot. And that is the sweet spot for them. It is the dry gas, and you are right, we are sitting on a lot of dry gas, but are getting to this wet gas area now. So that is the figure that I am keeping in my head, because certainly we want manufacturing and everything going on.

So with that, I want to mention that the Chairman came to Pittsburgh with me last week, and he is taking credit for my big victory on Tuesday. As long as he continues to be nice, I will give him all the credit he wants.

Chairman TIPTON. Thank you, Mr. Critz. I would now like to recognize Mr. King.

Mr. KING. Thank you, Mr. Chairman. And I thank the witnesses for your testimony. There have been a lot of things illuminated here in this discussion and testimony and the Q&A afterwards.

I think there is a place to go that we ought to examine from a public policy standpoint and it caught my interest when I see Mr. McAdams's testimony on the F-16s. I will tell it as I know it and then ask you to respond accordingly. I happen to be in a position where some of this information comes into my ears and it does not get published and I will tell it this way. The Pentagon decided that they wanted to have by my narrative, an F18 that they would fly at mach 1 and do so on biofuels. And so in order to create the biofuels necessary for the bio jet fuel, a 50/50 blend, biodiesel and regular jet fuel, they did not want to apparently take a few thousand gallons from a regular biodiesel producer but instead went to Pennsylvania to raise some algae in the dark that came from the bottom of the ocean where the sun does not penetrate in tanks with an individual there that had the skills and ability to do that. And then they needed to feed it something, so they found some condemned sugar from sugarcane in Louisiana, took it to Pennsylvania, fed it to the algae, looked around to see how we extrude the biodiesel out of this algae. Well, let us send it to Iowa. And we extrude the biodiesel. And they did that, shipped it out to Edwards Air Force Base, put it in an F-16 and flew it at mach 1.

Now, it seems to me there would be a lot of gyrations to go through and it appears that they wanted to avoid the criticism of food versus fuel. As I listened to the testimony here and the Q&A, I have not heard that come up. I am concerned that that could be a significant barrier within the mind of the administration. If the Pentagon itself could go to such great lengths to accomplish something that would have been done much easier in a far less period of time.

Mr. McAdams, do you have any experience with that? Do you have a comment on that?

Mr. MCADAMS. I am very aware of the certification process in the military. I have been working very closely as an association head on behalf of my members with the military, the Air Force, and the Navy. We are incredibly supportive of the MOU that was released last year that calls for funding, the \$510 million program between the Department of Energy, the U.S. Department of Agriculture, and the Department of Defense.

Mr. KING. Are they wasting money trying to avoid the food versus fuel argument?

Mr. MCADAMS. I would say our association supports a technology and feed stock neutral approach. I would be delighted to share with you the letter that we gave to Senator McCain on this subject about three weeks ago in reference to his questions to our association on how that matter went down.

Mr. KING. Is it your understanding that it went down any differently than I described it?

Mr. MCADAMS. I am not sure I know that example. They recently did a 450,000 gallon purchase. That also involved an algae company.

Mr. KING. You used the express feed stock neutral.

Mr. MCADAMS. Well, when I used the expression feed stock neutral, what I am talking about is if you scope a specific solicitation and you require something specifically, that is not feed stock neutral. And so what you have a propensity to do is you try to pick a feed stock winner. Right? And so our association has been feed stock neutral since the beginning. What you are talking about was a specific REMAT to use a percentage of algae in a specifically made jet fuel.

And let me just correct you on one thing with all due respect, sir. You cannot use biodiesel to make jet. Biodiesel has oxygen in it. It is 11 percent oxygen. So when you make jet fuel you are to use a hydrocarbon only. Jet fuel is the most narrowly prescriptive fuel to come out of the oil industry or coming out of the renewable industry. So it is a very tightly confined spec.

Mr. KING. Is it possible to process the biodiesel so that you can use it?

Mr. MCADAMS. You can take—

Mr. KING. And is it more cost effective than the method I described?

Mr. MCADAMS. You can take the feed stock, right, and you could take Ralphs catfish oil or you could take white greases or brown greases. And depending on the technology you use, which is generally hydro processing an isomerisation. You can make a jet fuel out of renewable. You can also take oils out of algae and process it into a jet fuel. The cost of the range of feed stocks varies. They are not all the same cost. I think that is the point.

Mr. KING. I think it would be substantially higher than the method that I described.

Mr. MCADAMS. I think that is probably correct.

Mr. KING. Thank you. There is more to be drilled into here.

But I wanted to turn to Mr. Tommaso before I ran out of time because you intrigued me with 10 feet of catfish fat on a 100 by

300 foot area. I do not know, 1,000, 1,100 cubic yards of fat. That is a lot of fat. And I did not think of catfish as being fat. And this is intriguing to me that we have 30 percent of our young people who are obese, even to the point where the former secretary of defense said it was a national security issue. And if we can process and we are all innovators here so if we can process—this is a bit of a facetious question, you can see it coming—but if we can process catfish fat into energy, biodiesel, for example, has anybody given any thought of how you convert all that extra human weight that the First Lady is trying to reduce into something that could be useful energy?

Mr. TOMMASO. I see a movie on that. No, there is a lot of fat. The catfish industry is shrinking, number one, due to the changing tastes of the consumers trying to reduce their fat as well as cheaper exports coming out of Southeast Asia. So every catfish plant is trying to grab a bigger piece of the shrinking pie. So that industry is in dire straits.

Mr. KING. It is true that we had a surgeon in California that was collecting human fat and converting it into biodiesel and burning it in his car and someone thought there was an ethical problem with that. I did not. I thought it was a pretty good utilization of human energy.

So my clock has run out. I thank all the witnesses and I yield back the rest of my time, Mr. Chairman.

Chairman TIPTON. Thank you, Mr. King.

Again, I would like to thank all of our witnesses for their testimony and input today. Very interesting when we are hearing comments of starting in a garage. We just held a jobs fair down in Alamos, Colorado. A young man was describing some work that he is doing on a fuel cell and interesting just watching and observing. Around the room there was some skepticism, and others that were very intrigued, could not help but bring to mind a guy named Steve Jobs who did pretty well with Apple starting out in his garage. And I think these are American energy solutions that we need to be pursuing.

So energy production is vital for the nation's economic and national security, and in most industries in the U.S., small businesses are the catalyst that drives innovation in new and better technology, new technology that harnesses energy that we did not have the capabilities to be able to use before. There are many exciting developments in biofuel—wind, solar, and hydroelectric industries, and new technology development not only moves us toward that “all of the above” energy policy and greater energy independence but also grows our economy and jobs.

This has been a very interesting hearing. I think the catfish fat probably took the cake. And we do look forward to following these advancements in the coming months and working with my colleagues to be able to expand energy production in the United States. It is that important for us.

I ask unanimous consent that members have five legislative days to be able to submit statements and supporting materials for the record. Without any objection, so ordered. And the hearing is now adjourned. Thank you again.

[Whereupon, at 11:19 a.m., the Subcommittee was adjourned.]

House Committee on Small Business  
Subcommittee on Agriculture, Energy and Trade

Hearing on "Small Business Innovators: On the Cutting Edge of Energy  
Solutions"

Thursday, April 26, 2012

Written Testimony  
Ralph Tommaso, CEO  
Greenworks Holdings, LLC

Good morning Chairman Tipton, Ranking member Critz and other distinguished members of the Committee. Thank you for the privilege to address you today. My name is Ralph Tommaso and I am the CEO and Co-founder of Greenworks Holdings. My partner, Dave Dunham, and I are very proud of what we have built and feel that Greenworks is the culmination of our years in the biofuels space and our platform for cutting edge innovation and change moving forward. A little over one year ago we had 30 employees primarily in Pennsylvania; today we have 153 employees in the Northeast and Southeast.

When Dave and I each separately began our businesses in Eastern Pennsylvania in early 2005, we set out to change the way fat, oil and grease wastes were used in this country. We envisioned wastes being diverted from the food industry and into clean-burning energy to fuel the American Economy.

Prior to our entry into the waste oil business, used cooking oil was predominantly diverted to the animal feed industry in the form of pet food and poultry feed. The processes used to divert the waste oil to animal feed, drove me to eat only organic foods not fed with "waste oil enhanced" feed, and to find alternative outlets for such waste oils, which include the oils gathered from wastewater treatment facilities. I knew that we needed to do something to evoke a change in the way the U.S. recycled these waste products.

In 2004, I read a study produced by the University of Georgia which proved that foodservice waste greases and animal fats were superior fuels to #4 and #6 oils used in heating applications. Moreover, when compared to emissions of Fuel Oil #2, emissions were lower with the waste greases especially with regard to SO<sub>2</sub> and CO<sub>2</sub> emissions<sup>1</sup>. I knew this would be a better use for waste grease, so we refined our process and by 2006, we were selling our biofuel, recycled from waste cooking oil, to two New York City skyscrapers. Since 2006 we have brought our fuels to universities, dye houses, and district heating plants. Our biofuel products that are derived from restaurant grease are approved by the

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<sup>1</sup> Adams, Thomas, T, et. al, [A Demonstration of Fat and Grease as an Industrial Boiler Fuel](#), The University of Georgia, Engineering Outreach Service (Athens, GA June 30, 2002).

U.S. Environmental Protection Agency (EPA) under the Renewable Fuel Standard 2 (RFS2).

This early success of being able to produce and sell the biofuel, only drove us to further improve our processes and expand our reach, taking on additional feedstocks. We feel that every ounce of fat, oil and grease that is diverted to our process is one less ounce that enters the American Food Supply Chain or left as waste. As such, our growth is dependent upon the feedstocks we can procure. Harvesting, collecting or growing raw materials to convert into biofuels is the challenge that we face as a company every day. The thought that the United States consumes over 18.5 million barrels of oil a day is daunting to an industry as new as ours. As the demand for our biofuels grows, Greenworks continues to sign-up additional restaurants to sell us their used cooking oil. We currently have over 17,000 restaurant partners and we're growing by around 500 a month, and yet that is not enough.

In 2010, we started to search out other sources of raw material. We found it in grease traps, the slimy sludge found in sewer pipes, by-products of other industries such as oil-seed processing and soap production, waste water treatment plants, and from food processing operations. It was then that we found catfish oil. To put it in perspective, what we found was the biofuel equivalent of the Canadian tar sands--millions of gallons of degraded fats and oils in solid form.

Catfish processing facilities design and build football field sized retention ponds to collect and process wastewater. This water, generated when the plant is washed and sanitized daily, catches all the small pieces of fats and solids that are left over in the filleting process. Over a period of years, this fat has accumulated on the surface of these ponds, 3-10 feet deep, 100ft wide and 300 ft long. Upon a long and competitive battle with other biofuel companies, we were awarded 100% of the bids for this accumulated fat, a total of 12 ponds and up to 60 million gallons of feedstock!

Competing for the contracts was the easy part. Next we came to the intensive process of extracting the fats and oils and turning them into a usable finished fuel product.

What we did next reminds me of those final table episodes of the World Series of Poker, where the guy goes all in with a pair of 6's. Never expecting to win all the bids, we were now faced with the daunting task of figuring out how to live up to the promises we made to these catfish plants. Some of these plants expressed to us that the money that they were going to receive from us over the next 3-5 years were the only profits that they were expecting to earn. We knew that these fish processors and their families were counting on our success, perhaps even more than we were.

We decided to build two plants, one in Alabama and one in Mississippi to process all the material locally. Each plant was designed to process 20 million gallons per year from a material that was the consistency of dirt. Through trial and error, borrowing technologies from each of our other plants and tricks from the petroleum industry, we were able to produce a biofuel that resembles melted chocolate. The process is continuous for 18 hours a day, with large front loaders scooping the fatty mud into waiting trailers. At the plant, it goes thru a series of melting, screening, heating, pressure, then a series of pharmaceutical grade centrifuges that polish the fuel to ensure a consistent quality. Our hope for the catfish based products is to be able to participate in the RFS2 either as a feedstock or as heating oil if and when the new heating regulations drafted by the EPA are approved. Presently we are working with EPA to certify that the final product qualifies as "biogenic waste oil/fat or grease" so that it may be used as a feedstock in renewable diesel processes that create hydrocarbon fuels.

The process we have developed with the catfish industry can be applied to fish processing plants around the world. Not only does the process capture waste oil that can be used to displace a petroleum product, it also reduces the waste that is ultimately processed by the local waste water treatment facilities. The processing facilities have seen that electricity consumption has reduced because the amount of pumping has been reduced by reducing waste, thereby helping the economic situation for the catfish producers and helping to provide a cleaner environment. We are presently in discussions to share our proprietary process with Vietnamese and Alaskan fisheries. We hope that we can expand our efforts to reduce more waste in fisheries in other regions, such as in the Northeastern United States.

By teaming up with the catfish industry in Mississippi and Alabama, our operation employs 25 people full time in Alabama and will employ the same in Mississippi by June 1. Dozens of jobs have been saved in the catfish industry due the new harvesting of oil by Smarterfuel South. Smarterfuel South has provided approximately \$4 million in construction trade during the last six months. The efforts have revitalized two Southern towns with double digit unemployment. We've brought hope to a depressed area that was starving for work and thirsty for something to believe in. We don't take the commitments we've made to these towns and these people lightly. We deal with ever changing regulations around our product and its applications, which causes us concern not only for the success of our company, but for the people that believe in us and their family's own success.

Running a business is tough. There are layers of regulations and laws at the Federal, state, county and town level. Small businesses need stable policies with reasonable time frames for permits and approvals. In an effort to participate in the regulatory and legislative process, we are members of the Advanced Biofuel Association and along with a handful of colleagues have created an ad hoc group to have more direct representation in Washington. These experts tell

us that at the Federal level the driving policy is the Renewable Fuel Standard 2 (RFS2).

The RFS2 was written with just transportation and home heating in mind. But, the point of the policy, as we understood it, is to reduce the nation's dependence on foreign oil, reduce greenhouse gas emissions and other toxic emissions from petroleum products. Petroleum based fuels are used in more than just transportation or home heating. While our product is not a transportation fuel, its application as an industrial fuel or for large scale heating reduces harmful emissions and ash residues which has enormous implications for our environment. The narrow definitions imposed by the RFS2 statute, creates tremendous barriers to innovation in the biofuel space. In order to be approved as a transportation fuel, the fuel has to either be a perfect hydrocarbon, that is have no oxygen molecules in the carbon chain, or be an already approved fuel additive such as biodiesel or ethanol, which enjoyed tax incentives and other incentives for many years. The policy needs to have some more flexibility in the applications for use if more innovative work is to be done in the biofuel space. It is nearly impossible for a small business, not backed by a large corporation, to develop a new biofuel technology and have to work through all of the millions of dollars of testing and development to-be approved as a transportation fuel. The fuel needs to have a market and be able to compete while working through the years and years of testing that is required to become a transportation or aviation product.

Our main challenge is regulatory uncertainty and the fluxuating and more often than not tightening policies under the RFS2.

If the RFS2 is modified, we recommend that it be expanded such that biofuels may be used in applications beyond transportation or home heating. At the time that the RFS2 was being written, there was concern that biofuels would be used in electricity applications and get credit not only under the RFS2 but also under the Renewable Electricity Product Tax Credit. If the concern is to not allow biofuels in the electricity market and count toward the biofuel mandate, then perhaps only exclude electricity. Petroleum is used in a multitude of applications. Reducing petroleum consumption helps the environment, adds to the effort of national security, helps create jobs and save jobs

Manufacturing industries uses petroleum products and many facilities need to reduce emissions given new EPA regulations. As the RFS2 presently stands, if a manufacturer were to use biofuels in their process for something other than transportation or space heating (assuming the biofuel is Biodiesel), the credits generated by the biofuel, called Renewable Identification Numbers (RINs) are valueless because they would have to be retired. The obligated parties purchase RINs to demonstrate compliance with the statute. Retiring the RINs makes them valueless to the obligated parties and significantly reduces the value of the biofuel. Biofuels represent a potentially cost effective way for the manufacturing

industry to reduce harmful emissions, thus saving manufacturing jobs while simultaneously creating and preserving jobs in the biofuels industry.

We believe in what we are doing to create jobs and improve the environment in innovative ways. If the government is going to be involved, there needs to be recognition of small businesses efforts and needs for approvals in a more expeditious manner and an effort toward regulatory certainty.

Thank you for this opportunity to share with you our innovative efforts at Greenworks Holdings, LLC.



**Statement of Jerry Taylor  
President & Chief Executive Officer  
MFA Oil Company**

**Co-Founder  
MFA Oil Biomass LLC**

**Testimony Before  
Committee on Small Business Subcommittee on Agriculture,  
Energy and Trade**

**Small Business Innovators: On the Cutting Edge of Energy Solutions**

**Thursday, April 26, 2012**

Chairman Tipton, Ranking Member Critz, and members of the Subcommittee, thank you for the invitation to testify today on how small businesses are serving as innovators on the cutting edge of energy solutions.

I am Jerry Taylor, President and Chief Executive Officer of MFA Oil Company. I also serve on the boards of Mid America Biofuels, the National Cooperative Refining Association and the National Council of Farmer Cooperatives.

Formed in 1929, MFA Oil Company is a farmer-owned energy cooperative in the State of Missouri with 40,000 members. Before ethanol as we know it today, MFA Oil Company was producing fuel grown by our farmers. Prior to the oil embargo of the 1970s, MFA Oil was one of the early producers of gasohol, which started America on the long road towards energy security and energy independence. MFA Oil was able to make that bold move because of its long history in Missouri and strong relationship with the region's farmers.

From those days of gasohol, MFA Oil today supplies fuels, lubricants, and propane to customers in Missouri, Arkansas, Oklahoma, Kansas, Indiana, Kentucky and Iowa. Through a subsidiary, MFA Oil operates Break Time convenience stores in Missouri and Arkansas, and Jiffy Lube and Big O Tire franchises in Missouri. MFA Oil also is an investor in a biodiesel production facility in Missouri, offers E-85 at over 50 locations, and has a 10 percent ethanol blend at more than 300 MFA Oil fueling stations.

In 2008, we began laying the groundwork to expand our energy services and take on America's most important, but most difficult renewable energy sector – biomass.

Our pursuit of this expansion was spurred in part by Proposition C, a 2008 ballot initiative approved by Missouri voters. Proposition C repealed the state's existing voluntary renewable energy and energy efficiency objective and replaced it with an expanded, mandatory renewable electricity standard of 15 percent by 2021. This commitment has triggered significant activity among electricity providers including among coal plants to assess co-firing coal with biomass products.

Beyond Missouri's renewable energy law, we saw an opportunity in the fact that much of the state has a high rate of underutilized, marginal farm land combined with a significant density of poultry farmers who are very vulnerable to a rise in heating costs necessary to heat poultry barns.

MFA Oil Company's biomass initiative took a major step in 2011 when we partnered with Aloterra Energy LLC to form MFA Oil Biomass LLC (MFAB), a separate small business with the mission of leading the cooperative into the renewable energy field. MFAB is utilizing our existing knowledge in farming and in the energy markets to form a completely vertically integrated renewable energy supply chain. This vertically integrated system provides farmers an energy crop source, unique harvesting and planting equipment for the crop's rhizomes, specialty harvesting services for the mature crop, processing technology, and marketing services to get the best return for the farmer and the cooperative.

One hundred seventy-five farming families have dedicated acres to the new energy crop and MFAB anticipates this number will grow to over 1,600 as our projects scale up to maturity at 50,000 acres per region. These families will be the backbone that will help reduce our dependence on foreign oil by displacing the current fossil fuels that are used for agricultural heating and power plants.

### **Our Crop**

MFAB recognized early on that having a versatile feedstock, something able to be used in multiple products, was critical to success. MFAB's extensive research confirmed the potential of *Miscanthus x. Giganteus* as not just a viable feedstock but one with incredible potential. *Miscanthus Giganteus* is rated to grow from hardy zones 4-9, and unlike other similar species, it can grow in temperatures as low as 43° F. A *Miscanthus Giganteus* stand is estimated to last 15-20 years or more after the initial planting.

*Miscanthus Giganteus* is a C4 warm season perennial grass that is non-invasive, drought and pest resistant, and needs less fertilizer than food crops, which translates into less run-off into the region's water systems. In fact, a Biomass Crop Options and Supply Chain Feasibility study performed by Missouri Biomass Farmer Supply Chain Consortium and funded by the Missouri Agricultural and Small Business Development Authority (MASBDA) found that *Miscanthus*'s qualities lead to minimal run-off into water systems, causing it to be well-equipped for growing on marginal land. As such, the target farm is marginal and/or underproductive land that is not used for row crop production.

The grass is also extremely efficient in sequestering carbon from the air which is an added benefit as carbon markets further develop. We are in the process of confirming third party studies showing that *Miscanthus* has a ratio of 53:1 in terms of carbon sequestered per acre versus the carbon emitted in farming/harvesting the crop itself. Furthermore, producers have found that by planting *Miscanthus*, their

soil quality has improved due to decreased compaction and increased soil organic matter. This latter information has dramatic consequences for America's farmers.

Regarding efficiencies, third party studies (and we are confirming with our own teams) establish Miscanthus as having a 36:1 energy-in to energy-out ratio, making it very efficient and the consumers of this product will therefore not have to address assertions that energy or biobased products sourced from Miscanthus are not truly renewable. Lastly, at 10-15 tons per acre, Miscanthus doubles its nearest competitor in tonnage and increases the farmer's return. It is also projected to produce three times more gallons of ethanol per acre than corn.

#### **Our Model**

We use the phrase "vertical integration" frequently in our daily work. This model grew out of two years of research and frustration in trying to understand the best way to enter into the biomass industry. Growing, harvesting, and processing crops whose sole use is an energy source is something that is in its infancy. MFAB's owners realized that to develop farmer support we had to understand each aspect of our supply chain and be able to answer every question to ease farmer concerns and gain commitment. After extensive research, we came to the conclusion that the only way to control our destiny in this nascent industry was to rely on ourselves and become experts in each area of our own supply chain that we controlled. Also, the economics of biomass – high volume and low margins – dictates this model for survival.

From our vertically integrated model and emphasis on making Miscanthus inexpensive to plant evolved our approach to our biomass acres as "oil fields" of liquid fuel biomass reserves. Focusing on a true "feedstock first" viewpoint, we are agnostic as to conversion technologies. We are only interested in what makes economic sense and what has the best risk-reward profile.

MFA Oil is already supplying fuel, including propane to thousands of farmer members and non-members in each state where we operate. Therefore, MFAB is well positioned to introduce a new fuel source to existing customers and to create new fuel markets. MFAB is developing biomass supply and heating systems for existing MFAB members that already purchase propane – specifically Farm to Fuel – a new start up that has designed and is producing a high efficiency biomass furnace. With approximately 100 of our pellet stoves in operation today, many customers are already transitioning their heating systems to be compatible with our pellets. Last, if necessary, locating our facilities near transportation infrastructure allows MFAB to access international pellet markets.

Most other entities in this industry are focused on one technology and biomass is an afterthought. In contrast, MFAB is not only developing the biomass but is also simultaneously developing multiple biomass markets in pellets, biobased products, biobased chemicals, and we are making solid advancements in fiber based processes to replace a host of petroleum products ranging from Fiberglass to car parts. While this is occurring, we are also supplying significant test tonnage to liquid fuel companies developing their different types of liquid fuel technologies.

Our future plans entail building biorefineries inside our biomass reserve areas that make multiple higher value products that each replace part of a barrel of oil. This allows a conservative and methodical approach, instead of betting our future on the success of a specific conversion technology. Dedicated

energy crops require the cultivation of farmer relationships and a vertically integrated model that assures the farmer that all of the pieces are in place for success. Our emphasis is on working in partnership with our farmers from soil to market.

We believe in starting with the farmers and the feedstock – the rest will follow. We would not leverage our future on an unproven technology, but instead started with proven markets and the proven technology of solid fuel pellets. It was the only thing that made sense to us and our farmers. We put forward a fully detailed business model to progressively scale up each project to 50,000 acres. At maturity our three project areas will have 150,000 acres and produce 1.8 million tons of biomass per year. In liquid fuel language, this would create a 20 year reserve of 93,000,000 barrels of liquid fuel, using the same language and conversion methods of the oil and gas industry. (150,000 tons \* 12 tons per acre = 1,800,000 tons \* 15.5 MMBTU/ton = 27,900,000 MMBTU / 5.8 MMBTU per barrel of crude oil = 4.66 million barrels of crude oil \* 20 year life of crop = 93 million barrels of crude oil equivalent)

### **Keys to Our Success**

I believe our story is one about the entrepreneurial spirit inherent in American agriculture—we saw a need, assessed our options, and then applied know-how, skill and hard work to develop a solution. It is also a story of the role that cooperatives play in bringing individual farmers and ranchers together to seize new opportunities in the marketplace that, on their own, they would never be able to take advantage of. As a co-op, we are able to work hand-in-hand with producers as valued, trusted business partners, allowing farmers to boost their earnings from the marketplace and diversify their income streams.

It is also a story illustrating a broader point about the success of farmer cooperatives in delivering value for their producer-owners, fostering economic growth in their communities, and delivering safe and abundant food, fiber and fuel to consumers here in the U.S. and around the globe.

The impact of farmer cooperatives therefore extends far beyond the farm gate. For example, co-ops have a unique and deep seated relationship with their local communities— after all, the co-op's owners and the co-op's board of directors are made up of farmers and ranchers who themselves are part of the community.

For these rural communities, farmer-owned cooperatives are much more than just a local employer. They add significant value to the tax base through their own operations and the value they bring to their members' operations. In many rural areas, the cooperative has become the social and economic hub of a community, sponsoring the local little league team and creating scholarships for deserving high school students. To that point, the MFA Foundation sponsors approximately \$750,000 in student scholarships each year.

When a farmer co-op board makes a business decision, their perspective is how it will impact Main Street, not Wall Street. This perspective helps in fostering a focus on building the business to be sustainable in the long term and on the value provided to the farmer-owners. It is this fact that makes farmer co-ops vital in ensuring that America as a whole will benefit from this country's call for increased domestically produced renewable fuels.

A key factor to our success occurred when MFAB was able to leverage our co-op relationships and our vertically integrated biomass model with the U.S. Department of Agriculture (USDA) and their Biomass Crop Assistance Program (BCAP). In FY2011, USDA approved \$14.6 million in BCAP funding for three project areas – central Missouri, southwest Missouri and northeast Arkansas. This money is going to local farmers to establish *Miscanthus Giganteus* to be used as an energy feedstock. Leveraging BCAP funding, MFAB has signed up over 12,708 acres with its farmers to grow *Miscanthus Giganteus*.

It is hard to articulate just how difficult it was, and still is, to educate farmers on a strange new plant called *Miscanthus Giganteus*. This was not an attempt to plant a known crop in a new industry, but an unknown crop in a non-existent industry. Add to that a crop that was at the time too expensive (at \$1400 per acre) and being planted by hand. And we were asking farmers to spend capital without a return on investment for three years. Farmers are risk adverse and rightfully so.

To that end, the BCAP funding was critical to bridging the gap with our producers to take that leap of faith. What it did was make it possible for us to invest in cutting edge technology to quickly mature the industry and brought the costs down to below \$750 per acre. Within a few short years, the costs should be worked down to roughly \$250 per acre with an estimated net return on investment to the producer at \$400 per acre. All this occurring on land that had been underutilized or earning very little. At that point, federal investment in the form of BCAP is no longer needed to sustain our efforts.

#### **Our Potential**

The four-year goal of MFAB is to establish approximately 50,000 acres of *Miscanthus Giganteus* in each of its three project areas. The 50,000 acre goal will enable each area to process approximately 600,000 tons of biomass per year. Each ton contains about 15,500,000 BTUs, which means at full maturity each project area can produce enough energy to power 65,000 homes or produce 1,600,000 barrels of renewable liquid fuels each year.

For all three project areas combined, third party feasibility studies prepared by Environ International Corporation anticipate a \$150 million annual economic impact from growing this new energy crop, while creating 2,700 new jobs.

Additionally, we have seen our potential fuel pellet markets serving agricultural heating needs explode. To keep up with demand, MFAB has purchased a pellet stove company and is rapidly developing this market. Displacing only 35 percent of the propane market in southwest Missouri and northwest Arkansas would create an annual pellet market of 600,000 tons. MFAB has also completed extensive side by side comparisons to propane with Tyson growers with outstanding results for the *Miscanthus* pellets.

The existence of MFAB backed by our committed farmers has led to dozens of meetings with technology providers from around the U.S. as well as international companies, all seeking to leverage our existing acres and assess establishing liquid fuel plants in our project areas. This has triggered several interactions with our state economic development agencies and we are currently assessing the use of several funding sources to accelerate our manufacturing projects.

Beyond the quickly developing liquid fuel and biobased chemicals markets, MFAB is implementing a model to assist small towns across the U.S. in complying with EPA wastewater discharge requirements. Rather than requiring small towns to build multi-million dollar water treatment facilities, MFAB is working with state level environmental agencies to help municipalities comply with regulations by using *Miscanthus Giganteus* to filter the water in conjunction with drip line technologies. This has enormous implications for America's small towns to save money in a tough economic period and to properly clean water to the standards of the EPA without massive capital expenditures.

Another benefit is the reclamation of mine land. Mining companies across the Midwest are working with MFAB to plant *Miscanthus* to increase organic matter, sequester carbon, improve soil drainage and water retention, reduce soil erosion, reduce nutrient leaching, increase wildlife habitat, and reduce water runoff. Hundreds of thousands of acres of mine land are currently sitting idle, but are also continuing to contaminate nearby communities, which is why the planting of *Miscanthus* is critical to stabilizing soil and creating a new source of biomass for regional "green" projects.

Regarding power needs, the city of Columbia, Missouri, has instituted a self-mandated 15 percent renewable energy requirement and the University of Missouri is putting in place a biomass boiler, which will be online June 2012.

MFAB also is working with the Missouri based USDA – Agricultural Research Service, the University of Missouri, and Arkansas State University on several research projects related to *Miscanthus*. We have taken on the role of bringing industry to the table as advisors and to assess new projects and opportunities for the region's businesses and farmers. This includes potential joint projects with the corn growers associations using corn stover, retrofitting underutilized regional power plants to burn biomass, and assessing technologies of Missouri-based companies to commercialize liquid fuel projects. Additionally, we are exploring joint projects with Missouri equipment dealers to assess harvesting and storage techniques and to spur local equipment sales, as well as a 200 ton *Miscanthus* pellet test burn with the City of Columbia to test equipment.

Our farmer-owners see incredible opportunities as this endeavor takes off. They recognize the potential to offer America's rural communities permanent manufacturing jobs, a new cash crop for farmers, a local source for green heating, renewable liquid fuel sources, biobased chemicals, green building materials, water treatment systems, soil reclamation systems, and consumer packaging.

In closing, meeting the food and energy needs of a growing world population is a daunting task but one that will be accomplished by fostering American agriculture's pioneering spirit. MFAB has harnessed that spirit to advance opportunities for our farmer members.

Again, thank you for the opportunity to be with you today and I am happy to respond to any questions.



Advanced  
Biofuels  
Association

**Subcommittee on Agriculture, Energy, and Trade  
House Committee on Small Business  
U.S. House of Representatives**

**Small Business Innovators: On the Cutting Edge of Energy Solutions**

**Testimony**

**Michael J. McAdams  
President, Advanced Biofuels Association**

**April 26, 2012**

Chairman Tipton, Ranking Member Critz, members of the Committee, I am honored to be with you this morning and proud to report to this Committee and to this Congress that America's domestic advanced biofuels industry has moved from the beaker to the barrel, all in record time. And like most parts of our nation's economy, small business and American ingenuity are proving to be the engine driving our success.

The Advanced Biofuels Association represents over forty of our nation's and the world's leading advanced biofuels and advanced feedstock producers. Our members range in size from the large household name corporations to small and medium-sized companies. Since its inception, our Association has advocated for a level playing field when it comes to public policies, specifically calling for technology and feedstock neutrality, as well as parity in the form of any government support. Washington should not be in the business of picking winners and losers.

Many of our members specifically fit within the definitions of a small business found under the current law. In fact, I am delighted to be appearing with one of our members on this panel today: Mr. Ralph Tommaso of Greenworks Holdings--a company who is delivering renewable advanced gallons today.

The Association represents a wide range of technology platforms from synthetic biology and hydro-processing to gasification, to name just a few. Our members are also working on developing a wide range of feedstocks. Some are planting giant miscanthus, sugar beets and creating cellulosic sugars from woods, grasses or municipal solid waste, while others are planting new types of trees or growing algae to produce agricultural grade oils for refining.

The challenge for all companies large or small is to build and deploy the first of kind new innovative technologies which will produce these new advanced biofuels. In order to be successful these small business owners must manage the technology scale up risk, the volatility of commodity prices and the certainty of regulatory policy.

Before we discuss policy, let me start today by sharing some of the biggest success stories which have occurred over the last year. The Air Force has flown the F-16/Thunderbirds on a mixture of advanced biofuels, the navy has tested advanced biofuels in ships and vehicles, and the commercial sector has flown the first cross country flight on a blend of renewable jet fuel. We

have one member (Dynamic Fuels) producing a million gallons of renewable jet and renewable diesel a week, and have five members who have gone public. In addition, two Colorado member companies are preparing to deploy their innovative technologies in the near term.

Gevo, which will produce an isobutanol, a drop in, fungible fuel, will commission its 18 million gallon plant in June of this year in Luverne, Minnesota. While Sundrop Fuels is on target to break ground to build a 50 million gallon cellulosic gasoline plant in Louisiana this year.

As you can see from the membership base, there are significant opportunities to create jobs in rural America, both from the growing of the feedstocks to the deployment of the plants. To the point on innovation, you are seeing new fuels that can be blended in new ways with existing products--the opportunity to make new bioproducts and the possibility to grow new feedstocks which are more sustainable and more productive than existing options. These hold the ability to create an entire new set of opportunities for farmers and landowners.

Mr. Chairman, turning to policy, as you recognized in calling this hearing there are a significant number of small business people involved in this sector. Several of our members welcome the opportunity to participate in the various Small Business Administrative programs which call for matching funds and leveraging. One member company has been able to help leverage the pre-engineering cost with a matching contribution to assist in the building of a plant in Florida. Unfortunately, other companies have been unable to utilize the Small Business Administration's funding options as they utilized large partners or were supported by venture capital organizations of scale. I have been told this prevents them from being able to access most of the funds available.

Earlier I spoke about regulatory certainty. Nothing is more important to the small business owners and innovators than a consistent long term policy frame from which to build a business. For our sector the single most important policy component is the Renewable Fuels Standard, passed overwhelmingly in 2007 by a bipartisan Congress and signed into law by President Bush. Although it is not perfect, it is fundamentally important that the Congress continue to send a strong bipartisan signal of support for this policy if we wish to continue the remarkable progress and grow an advanced biofuels industry.

As for tax policy, it has been a mixed bag at best. Many of the existing provisions have already expired and some are crafted in such a manner that they are not as helpful to small business or create an uneven playing field across the sector. As this Committee was told last year by the National Small Business Association, "only 13% of the small business owners handle their taxes internally--meaning 87% are forced to pay an external accountant..." As you all know these are complicated and the current record of renewal has been on a piece meal basis for a number of years. This simply does not provide the certainty on which to build a business.

Mr. Chairman, the advanced biofuels industry is extremely innovative and has moved rapidly over the last five years. We believe we can and should be a fundamental part of an American energy policy that adopts a portfolio approach. As I have shared with you this morning, we are already starting to see advanced biofuels delivering on its promise of creating new jobs, and helping to strengthen our nation's economic and energy security. Thank you for the opportunity to testify before you today. I look forward to answering your questions.



**Statement of Environmental Tank & Container (ETC)  
Matthew J. Hughes, Director of Business Development**

**April 26, 2012**

**The Committee on Small Business Subcommittee on Agriculture, Energy and  
Trade Hearing on “Small Business Innovators: On The Cutting Edge of  
Energy Solutions.”**

Chairman Tipton, Ranking Member Critz, and members of the Committee, thank you for the opportunity to testify today. My name is Matthew Hughes, and I'm the Director of Business Development with Environmental Tank & Container. Going forward I will refer to our company as ETC.

I'd like to start off by saying that our CEO, William Polacek, would like to apologize for not attending today's hearing. There is a company visiting us from California and they are negotiating a fairly large project that is significant to our company's growth.

Located in Johnstown, Pennsylvania, ETC occupies a 160,000 square foot building currently shared with our subcontractor, United Industrial. This property was originally a World War Two-era munitions factory that was later transformed into a railcar factory.

Officially opening just over 11 months ago, ETC, like many small business start-ups in the oil & gas industry, owes its existence to Shale energy. Each time you come across success stories like ETC's, "born of the great Shale boom," you'll find many other companies like our contract fabricator, United Industrial, that are getting a second chance at life. United, once tied exclusively to the commercial fabrication market, fell victim to the economic downturn of 2008 and was forced into bankruptcy. Shale energy blew life back into the almost shuttered plant, which had 3 workers in May 2011 and was up to 80 by year's end -- employing everything from engineers and welders to project managers and sales people.

Shale energy is a rapidly changing industry with plenty of room for growth. Back in 2006, our President and CEO, William Polacek, investigated business opportunities within the Marcellus Shale and felt like there may be opportunities down the road but didn't see a good fit at the time. Like all good entrepreneurs he believed in his hunch and kept an eye on the young industry waiting for his opportunity. It came in 2010 when some of the larger exploration and production companies announced they were converting their Marcellus operations to "closed-loop" systems. The new protocol changed the method used for containing drilling waste and it also outlined best practices

for on-site water storage. Both initiatives created a demand for portable steel storage containers. Because ETC was a nimble, small business, it was able to quickly respond to those needs. Mr. Polacek constantly reminds us that we will be building things a year from now that we never thought of.

ETC answered the need when the market asked for reliable, durable “frac tanks” that were leak-free and capable of withstanding the rough terrain and cold winters in Pennsylvania. ETC answered the need when drilling contractors had to store all on-site drilling fluids in “mud tanks” instead of lined earthen pits. ETC answered the need when drillers, already slowed down by a multitude of time-consuming permitting procedures, asked for portable, above ground water impoundments that didn’t require soil disturbance permits. And we are proud to say that we are answering the call again, this time in the design and development of onsite treatment equipment that reduces the amount of frac fluid that is hauled offsite for disposal.

While ETC can be credited for some innovations in our industry; we must also give credit to our customers. Many of which are independent owner/operators of oilfield service companies, equipment rental firms, and engineering groups. They are first to see the need and come to us with their ideas. By virtue of opening our doors, we’ve created a means for many others to spur innovation and growth.

Direct job growth and innovation is not the only gain from our relationship with the Shale industry. There is valuable spinoff business as well. More than 40 percent of the materials that go into our products are purchased locally. If this is the trend occurring in the Marcellus and Utica shale plays, I’m confident it’s happening in the shale plays throughout our country.

Recently, most businesses that serve the natural gas portion of the Shale industry are facing a common obstacle: The price of natural gas is now too low, relative to what it costs to extract it. When you visit a natural gas well pad, attend an industry tradeshow, or speak with customers about future orders, the same concern arises: How will this industry continue to grow and prosper if the price of natural gas stays as low as it is? And what’s frustrating to us as small business people is that we can’t fix that issue with our hard work, innovation and resolve. The fix lies in increasing demand and usage.

In closing, I ask the members of the subcommittee to be mindful of the young start-up companies, the once-bankrupt business that are rising from the ashes, and the multitude of small businesses that rely on Shale energy for their livelihoods. And to consider looking into what you can do as policymakers to help increase the demand for natural gas as fuel for our energy sector and transportation sector.

Chairman Tipton, Ranking Member Critz, and:

Rep. Roscoe Barlett  
Rep. Steve King  
Rep. Jeff Landry  
Rep. Renee Ellmers  
Rep. Lou Barletta  
Rep. David Cicilline  
Rep. William Keating  
Rep. Judy Chu

I thank you for working together in a bipartisan manner to help small businesses succeed, help fuel job growth, and help our nation become more energy independent.



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**Written Testimony of Anne Steckel  
National Biodiesel Board Vice President of Federal Affairs  
Submitted to the U.S. House Committee on Small Business  
Subcommittee on Agriculture, Energy and Trade  
Hearing on Small Business Innovators: On the Cutting Edge of Energy Solutions  
April 26, 2012**

**Executive Summary:** Biodiesel is a renewable, low-carbon diesel replacement fuel made from an increasingly diverse mix of feedstocks including agricultural oils, recycled cooking oil and animal fats. It is the only domestically produced, commercial-scale Advanced Biofuel – as defined by the Environmental Protection Agency (EPA) – that is readily available and accepted nationwide. It meets a strict ASTM fuel specification and is used in existing diesel engines without modification.

Biodiesel is a relatively new player in the U.S. energy landscape, with commercial-scale production for only about six years. The vast majority of biodiesel companies are small businesses. The industry has more than 200 registered producers, with plants in nearly every state in the country, from California to Rhode Island. Last year, those plants produced a record volume of nearly 1.1 billion gallons of biodiesel. That production supported more than 39,000 jobs across the country while generating more than \$2.1 billion in household income, \$3.8 billion in Gross Domestic Product (GDP), and at least \$628 million in federal, state and local tax revenues, according to a recent economic study<sup>1</sup>.

The industry's success is also stimulating research on and demand for the development of new feedstocks such as algae that will pave the way for the next generation of biodiesel production. Biodiesel producers are also pioneering new technologies that will make production more efficient and economical. Under projected expansion by 2015, biodiesel is expected to support more than 74,000 jobs, \$4 billion in income, and some \$7.3 billion in GDP, according to the economic study.

While biodiesel's growth in recent years is to be applauded, it is important to note that the success of this young industry has come in part as a result of strong domestic energy policy implemented by Congress to ensure that the U.S. diversifies its fuel supplies. Specifically, the biodiesel industry is significantly boosted by a federal tax incentive, the Renewable Fuel Standard (RFS), and several programs in the Farm Bill to improve technology and boost biodiesel awareness and market acceptance.

This year, the RFS will ensure that at least 1 billion gallons of biodiesel are blended into the U.S. fuel supply. In fact the biodiesel industry has already exceeded that target, and the industry is working with Congress and the Administration to continue a strong RFS that incorporates aggressive goals for diversifying our nation's fuel supplies and that reflects the biodiesel industry's true capacity.

The biodiesel tax incentive, which also covers renewable diesel and bio-jet fuels and expired on December 31, 2011, has also played a key role in the growth of the biodiesel industry. In its short history, the \$1-per-gallon tax incentive has achieved its desired goal of stimulating U.S. biodiesel production while creating jobs, reducing America's reliance on imported petroleum and improving the environment. It also has helped make biodiesel more price-competitive with petroleum diesel and ultimately reduced prices for the consumer.

When the tax incentive was first enacted in 2005, the U.S. produced 112 million gallons of biodiesel<sup>ll</sup>. By comparison, in 2011, with support from the tax incentive and the RFS, the industry set a new production record of nearly 1.1 billion gallons.

The biodiesel industry is poised to continue that momentum so long as Congress and the Administration continue supporting these strong policies for stimulating clean, domestic energy production. The recent expiration of the tax incentive has jeopardized the industry's continued growth, and we urge Congress to expeditiously pass an extension.

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Chairman Tipton and Ranking Member Critz, I appreciate the opportunity to submit written testimony on behalf of the National Biodiesel Board (NBB) regarding the role of the biodiesel industry in achieving our nation's energy goals.

As producers of America's only commercial-scale Advanced Biofuel that's sold and produced nationwide, the U.S. biodiesel industry looks forward to working constructively with this committee to ensure that our nation's Advanced Biofuel goals are met.

NBB applauds your efforts to explore innovative solutions in the energy sector. Our industry's recent success is proof that with the right policies, U.S. industry can produce significant quantities of homegrown energy that creates jobs, improves the environment, and diversifies our energy supplies so that we are not so vulnerable to global petroleum markets.

NBB believes that the U.S. biodiesel industry can sustainably grow by 2015 to 1.9 billion gallons of production, or roughly 5 percent of the nation's diesel transportation pool. This growth will come through advances in technology, the development of new feedstocks, and improvements in yields from existing feedstocks. But it also will come only with the support of strong domestic energy policy.

History has shown that well-crafted energy policy can be powerful policy mechanisms to achieve the nation's energy objectives and leverage private sector investment to promote the deployment and utilization of new energy resources. This is certainly the case with the tax credit for biodiesel, renewable diesel and bio-jet fuel. As with every other major U.S. energy resource, effective tax policy has helped create domestic manufacturing jobs as well as significant economic and energy policy benefits.

Before the biodiesel tax incentive expired on December 31, the U.S. biodiesel industry had a record year of production in 2011, producing nearly 1.1 billion gallons and creating good-paying jobs in nearly every state in the country. This success is in part attributed to the strong federal policies in place encouraging domestic energy production. While we understand the pressures facing Congress, we believe economic conditions are simply too weak today to pull support from a growing American industry that is a rare bright spot in this struggling economy.

The recent expiration of the \$1-per-gallon biodiesel tax incentive poses a significant threat to the industry's continued growth, economic impact and job creation. Now, as much as ever, the biodiesel industry needs stability and support to continue its remarkable success story, and we encourage Congress to provide a retroactive extension of the biodiesel, renewable diesel, and bio-jet tax credit.

Quickly reinstating the expired biodiesel tax incentive would provide needed certainty and protect against future disruptions and the loss of thousands of much-needed jobs.

***Biodiesel Public Policy Benefits:*** There are compelling public policy benefits associated with the enhanced production and use of biodiesel in the U.S.

***Biodiesel Reduces our Dependence on Foreign Oil:*** Biodiesel can play a major role in expanding domestic refining capacity and reducing our reliance on foreign oil. The 3.6 billion gallons of biodiesel produced in the U.S. since 2005 have displaced an equivalent amount of imported diesel fuel with a clean-burning, efficient fuel that the EPA estimates reduces lifecycle greenhouse gas emissions by as much as 86 percent compared to petroleum diesel fuel and creates 5.5 units of energy for every unit of energy that is required to produce the fuel.

***The Biodiesel Industry is Creating Jobs and Making a Positive Contribution to the Economy:*** NBB estimates that the U.S. biodiesel industry supported more than 39,000 jobs in 2011, in all sectors of the economy, and added more than \$3.8 billion to the nation's GDP.

Biodiesel is America's first Advanced Biofuel and when compared to gasoline, diesel and ethanol, it is at a fundamentally different stage of development and should be treated as a new fuel in the marketplace. The petroleum industry has received a number of tax incentives for many years; and the ethanol industry has been around for decades and had its tax break since 1980. In contrast, the biodiesel industry has had commercial-scale production for only about six years, and has had its tax credit only since 2005. The gasoline marketplace is approximately 140 billion gallons, the diesel pool is approximately 60 billion gallons and the ethanol marketplace is producing some 14 billion gallons. By comparison, biodiesel production reached a record 1.1 billion gallons last year. Biodiesel is an up-and-coming industry and is in a far more fragile stage of development.

***Biodiesel is Good for the Environment:*** Biodiesel is an environmentally safe fuel, and is the most viable transportation fuel when measuring its tailpipe emissions, lifecycle carbon emissions and energy balance. Since 2005, biodiesel has reduced lifecycle greenhouse gas emissions by 48.3 billion pounds, the equivalent of removing 4.25 million passenger vehicles from America's roadways.

***Biodiesel Reduces Diesel Emissions:*** Tailpipe emissions from traditional diesel – primarily from trucking fleets, school buses and other vehicles – are a significant health and air quality concern. In an update to its National-Scale Air Toxics Assessment earlier this year, EPA cited diesel exhaust as one of the nation's most dangerous pollutants, saying it is "among the substances that may pose the greatest risk to the U.S. population." Thousands of trucks and buses hit the road every day burning traditional diesel fuel. Substituting higher amounts of biodiesel for traditional diesel fuel is the simplest, most effective way to immediately improve emissions.

***Background and Industry Overview:*** Biodiesel is a renewable, low-carbon diesel replacement fuel. The EPA has determined, based on the performance requirements established by the *Energy Independence and Security Act* (EISA) (P.L. 110-140), that domestically produced biodiesel is an Advanced Biofuel under the RFS. In fact, it is the only commercial-scale fuel sold and produced across the United States to achieve this designation.

Biodiesel is made from waste greases such as recycled cooking oil, animal fats and secondary-use agricultural oils, and it is refined to meet a specific commercial fuel definition and specification. The fuel

meets the D6751 fuel specification set forth by ASTM International, the official U.S. fuel-certification organization. Biodiesel is one of the most- and best-tested alternative fuels in the country and the only alternative fuel to meet all of the testing requirements of the 1990 amendments to the Clean Air Act. There are approximately 200 domestic and foreign biodiesel plants registered with the EPA, representing a combined production capacity in excess of 3 billion gallons.

Biodiesel is primarily marketed as a five percent (B5) blending component with conventional diesel fuel, but can be used in concentrations up to twenty percent (B20). It is distributed utilizing the existing fuel distribution infrastructure with blending occurring both at fuel terminals and "below the rack" by fuel jobbers.

**Status and Background on the Biodiesel Tax Incentive:** The biodiesel tax incentive was enacted in 2004 as part of the American Jobs Creation Act (P.L. 108-357) and took effect in 2005. The incentive was subsequently extended through December 31, 2008 as part of the Energy Policy Act of 2005 (P.L. 109-190). H.R. 1424, the Emergency Economic Stabilization Act of 2008 (P.L. 110-343), again extended the incentive for one year through December 31, 2009, at which time the credit expired. After a year of being expired for all of 2010, Congress extended the tax credit through December 31, 2011 (P.L. 111-312).

It expired again on December 31, 2011, and is currently lapsed.

While the impact of the expiration is just beginning to be seen, the 2010 expiration of the tax credit had a severely detrimental impact on the domestic biodiesel industry. In fact, the industry's decline resulted in the loss of nearly 8,900 jobs and a drop in household income of \$485 million.

The biodiesel tax incentive is designed to encourage the production and use of biodiesel by making the fuel price-competitive with conventional diesel fuel. In general, current law allows taxpayers to claim the biodiesel tax incentive as either a \$1.00 per gallon general business income tax credit or as a \$1.00 per gallon blenders excise tax credit. To qualify for the biodiesel tax incentive, the fuel must by statute meet both the ASTM D6751 fuel specification and the Environmental Protection Agency's (EPA) registration requirements under Section 211 of the Clean Air Act.

The Internal Revenue Code provides a general business income tax credit to encourage the production and use of biodiesel, renewable diesel and bio-jet fuel. The credit is the sum of three credits – the biodiesel mixture credit; the biodiesel credit; and the small agri-biodiesel producer credit. The biodiesel mixture credit provides a \$1.00 per gallon credit for each gallon of biodiesel that is blended with conventional diesel fuel. The biodiesel credit provides \$1.00 per gallon for each gallon of pure B100 biodiesel that is used as a fuel. The small agri-biodiesel producer credit is a 10 cents per gallon credit for plants with a production capacity of less than 60 million gallons per year. The credit can be claimed on the first 15 million gallons of production.

**Conclusion:** The biodiesel tax incentive has helped achieve the desired goal of increasing the domestic production and use of biodiesel, and in turn has helped the U.S. realize the energy security, economic and environmental benefits associated with displacing petroleum with domestically produced renewable fuels. These benefits, however, will be jeopardized if Congress does not act in a timely manner to address the immediate issue facing the industry and extend the biodiesel tax incentive.

**About NBB:** NBB is the national trade association representing the biodiesel industry as the coordinating body for research and development in the U.S. It was founded in 1992, and since that time, NBB has developed into a comprehensive industry association which coordinates and interacts with a broad range of cooperators including industry, government and academia. NBB's membership is made up of biodiesel producers; state, national and international feedstock organizations and feedstock processor organizations; fuel marketers and distributors; and technology providers.

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Chairman Tipton and Ranking Member Critz, I again appreciate having the opportunity to submit written testimony on this issue of significant importance to the U.S. biodiesel industry. We look forward to serving as a resource for the Committee on issues related to energy policy as the committee proceeds.

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<sup>i</sup> Cardno ENTRIX June 8, 2011, Economic Impact of Removing the Biodiesel Tax Credit for 2010 and Implementation of RFS2 Targets Through 2015.

<sup>ii</sup> in 2004, prior to the tax credit be enacted the biodiesel industry produced only 25 million gallons.