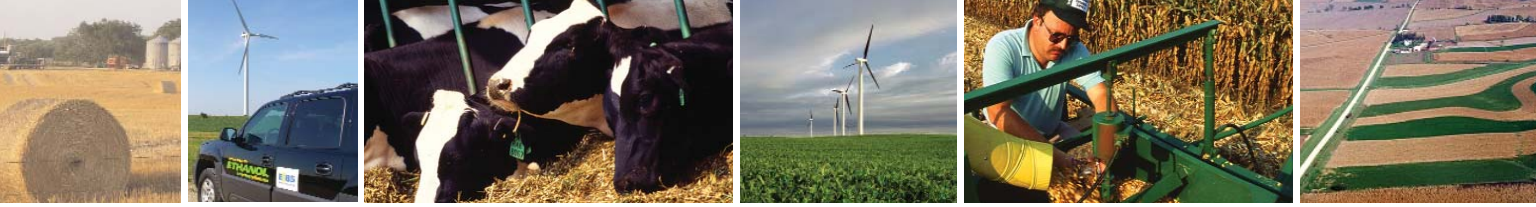

Locally-Owned Ag Energy

An American Energy Solution

Midwest Ag Energy Network

Midwest Ag Energy Network

MIDWEST AGRICULTURE IS THE CORNERSTONE of America's long-term energy solutions. America can create new economic opportunities, enhance U.S. security and promote a prosperous and healthy future for our children, by taking advantage of abundant Midwestern energy opportunities such as wind, solar and biofuels. At least 25% of America's energy could be produced from these sources by the year 2025 if we make aggressive commitments to a clean energy future.

In achieving the national goal, the Midwest, using its renewable resources and creative capacity, can become effectively energy independent. Local ownership of these new and emerging industries will lift rural communities by creating the ability to retain the wealth produced from rural working lands.

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America Needs Agriculture

Summary

America faces critical energy problems and agriculture has unique solutions.

Our national energy problems are well known. The United States uses vast amounts of energy to drive the world's largest national economy. However, U.S. oil production peaked in 1972 and expansion of natural gas production is increasingly difficult to achieve. A larger and larger share of the remaining world oil and gas reserves are located in countries that have unstable, corrupt or even hostile governments. Finally, as the developing world grows and needs more energy every year, we will have to increasingly compete with China and India for those remaining reserves. Fossil fuels have been fundamental to the economic growth and development of the 20th century.

Agriculture will become a major energy supplier to drive economic progress in the 21st century. Ag energy resources are renewable. As long as we manage the resource base, they will continue to produce indefinitely. Ag energy resources are clean, domestic, and stable. Agriculture can supply abundant, reliable and affordable energy resources to all sectors of the economy, including transportation, electric power generation, as well as fuels used to heat factories homes and businesses. Agriculture is the American safety net.

As agriculture becomes the safety net for national energy supplies, these new industries can be engines which drive rural development. However, for the full opportunity to be realized, local farmers and community members must be able to participate in the ownership of these new enterprises. Ag energy facilities create wealth, but ownership determines where that wealth accumulates.

America's Energy Challenges

The list of energy challenges that the U.S. faces is long and well known. The most painful challenge has been the rising energy prices. Energy prices started rising noticeably around 2002, but exploded after the hurricanes of 2005. Crude oil prices rose from the under $20 per barrel at the start of 2002, to the mid $30s per barrel at the start of 2005. They have since doubled again to record prices over $70 per barrel in the spring of 2006. Natural gas prices has nearly tripled in price since the start of the decade. Even coal prices have seen explosive price growth. Increasing energy costs flow through the economy placing stress on families, farms and businesses.

Rising energy prices amplify the problems associated with the U.S.'s dependence on imported energy resources. Even as the cost of oil rises, the U.S. is importing more oil each year. Energy supplies are a significant part of the ever-widening trade deficit. Security concerns grow as well. A larger and larger share of the remaining world oil and gas reserves are located in countries that have unstable, corrupt or even hostile governments. Domestic production of oil peaked in the early 1970s and has slowly declined since. Domestic natural gas production is now beginning to decline. While domestic reserves still provide 80 percent of natural gas consumed in the U.S., that portion will continue to fall — just as the domestic portion of oil consumption has fallen for 25 years. There is no drilling our way out of this dilemma.

Finally, as the developing world grows and needs more energy every year, we will have to increasingly compete with China and India and other dynamic developing economies for those remaining reserves of oil and gas. This increasing competition, combined with declining domestic capacity exposes the U.S. to market and geopolitical risks. Even brief political actions to withhold oil from the global market can have disruptive impacts on the American economy. Noted columnist Thomas Friedman points out that few oil exporting countries in the world have stable democratic governments. Security hawks, such as former CIA director James Woosely, are concerned that American consumers/taxpayers are effectively paying for both sides of the war on terror.

Coal is usually referred to as an abundant energy resource and coal supplies are suggested to last for two to three centuries — at current rate of use. However, if the U.S. economy seeks to replace gas and oil with coal and continue to grow, we can no longer forecast such long-term supply availability. Coal provides about one-fifth of the energy used in the U.S., while gas and oil provide about two-thirds.[1] Using various technologies to convert coal and replace liquid and gas fuels could result in the U.S. using up the coal supply in about one generation. [2]

Problems associated with energy are not limited to physical supply and economic considerations either. America has sought steady improvement in environmental quality for decades. Energy choices have a huge impact on achieving national environmental goals. The burning of fossil fuels drives the air quality problems that plague major urban centers. Yet, Americans want to continue the progress in improving air quality and water quality. This means improving energy systems to reduce fine soot that impacts human health, acid rain, and emission of toxic heavy metals like mercury. Fossil fuel extraction often comes at the expense of degrading working and wild lands that Americans cherish. Ultimately, burning fossil fuels is the primary driver of global warming. Every unit of fossil fuel that is burned releases carbon dioxide that has been long locked into geological formations. Release of the fossil carbon into the atmosphere contributes to heat trapping blanket of gasses in the atmosphere. Coal releases more carbon dioxide per unit of energy gained than any other type of fuel. Accelerating the exploitation of coal will under cut any ability to control carbon dioxide emissions.

Agriculture is a key part of the solution to America's energy dilemmas. Ag energy will become a major energy resource — the main question is simply how fast can it be developed and what is the price we pay in the meantime. Agriculture is the American safety net.

Ag Energy Solutions

Ag energy is different than fossil fuels. Fossil fuels are fixed resources based on geology. Ag energy is energy resources that are renewable and derived from our working lands, including farms, ranches and forests. The leading ag energy resources in the U.S. economy today are grain ethanol, wind energy and wood wastes from the forest products industry. Approximately four billion gallons of grain ethanol is produced annually as a substitute for gasoline and for expensive and toxic gasoline components, such as benzene or MTBE. Ethanol production has saved billions of gallons of petroleum and has also contributed to clean air

1. United States of America, Department of Energy, Energy Information Agency. On-line statistics. http://www.eia.doe.gov/emeu/mer/pdf/pages/sec1_7.pdf

2. U.S. Coal reserves equal 270,000 million short tons. The US consumes approximately 1,100 million short tons per year. At current rates coal resources will be depleted in 240 years. Tripling coal consumption to replace natural gas and petroleum would result in depletion of the coal reserves within 60 years — assuming no increase in the rate of energy consumption. Coal supply and consumption data are available on-line from the Energy Information Administration at http://www.eia.doe.gov/fuelcoal.html.

solutions in many parts of the country by reducing automotive emissions. Increasing use of E-85 shows that ethanol can be a much more dramatic clean air solution.

The forest products industry has long used its by-products, such as saw dust, bark, and other mill wastes to generate heat and electricity used by this energy intensive industry. This has been very cost effective, even during the decades of low fossil energy prices.

Wind energy investment and development has exploded in the past decade. In Minnesota, the legislature has required its largest utility to develop over $400 million dollars worth of wind energy capacity. Since that time, billions more have been invested in wind energy, from Minnesota to Texas and from Wyoming to Pennsylvania. Wind energy does not require the direct outputs of agriculture, but it does require access to open landscapes. It requires farmland and ranchland. While offshore wind development will likely be part of the long-term energy picture, on-shore wind development will provide the bulk of near-term renewable electricity production.

Farmers and ranchers are finding other resources to provide energy opportunities as well. Vegetable oil and recycled animal fats are now part of the diesel supply. States like Wisconsin and Vermont have turned dairy manure into an important energy asset, while improving the overall environmental performance of their dairy farms. Iowa farmers are harvesting switchgrass to help fuel a power plant, reducing the amount of coal being burned and conserving soil on sensitive and erodible lands. These strategies are providing small but measurable amounts of energy without reducing the production of food and fiber.

Agriculture has just begun to tap its energy potential for America. The Midwest's rich wind resource has just begun to be developed. Nebraska has an incredible wind resource, but has seen wind development on about one square mile of land. The U.S. still exports more corn that it processes into ethanol, and the biodiesel industry is just emerging. The potential of energy crops has long been discussed, but is now only in its infancy. The U.S. Department of Agriculture and Energy have outlined a strategy to secure one billion tons per year of biomass resources. These materials can be processed into a variety of products to replace natural gas, oil and coal.

The next model of ag energy investment is the biorefinery. The biorefinery concept looks at the agricultural value added process, and takes lessons from the traditional petroleum and chemicals industry. Biorefineries will break down the chemistry of plants and animal by-products and reconstitute them into a wider variety of products. These products range from motor fuels to specialty chemicals. Farmers can produce cellulose-rich feedstocks that will be delivered to these facilities. Value will be added in the form of high-volume, lower-margin products like motor fuel, and lower-volume, high-margin chemical products. This is how the petroleum industry maximizes income from a barrel of crude oil, and this is how the agricultural community can maximize income from a ton of biomass. This not only maximizes the value-added potential of agricultural products, but it maximizes our national energy, economic and environmental security as well.

To fully realize the opportunity at hand, a wide range of existing, emerging and ultimately new technologies will be needed to convert the products of America's working lands into commercial energy products.

The Scale of the Opportunity

Supplying 25 percent of all energy used in the U.S. with renewables produced on America's workings lands by 2025 represents a clear and definable goal. It also represents a goal that is already beginning to resonate with agricultural leaders around the nation. 25 by '25 is an achievable but challenging goal. Currently, the U.S. economy consumes 100 quadrillion Btus every year. That is equal to 340 million Btus per person per year — or equivalent to 750 bushels of corn per person per year. On a Btu basis the current corn crop equals about 25% of the coal used nationally. Currently, biomass and wind energy account for about 3% of the total primary energy use in the United States.[3] To meet the goal of working lands supplying 25 percent of the nation's primary energy use by 2025, the contribution of ag energy products must be increased ten fold. It will require smart use of a variety of resource, including new energy crops, carefully harvested crop residues, other agricultural residues such as manure and processing wastes, and technologies that require open landscapes such as wind turbines.

The 25 by '25 vision is important because it recognizes that energy markets are interrelated. The energy challenge is not just gasoline, or electric power, or natural gas. These markets and resources are ultimately interconnected. The nation needs to reduce the total dependence upon fossil fuels to meet its economic, security and environmental goals. At the same time, energy is an interconnected opportunity for agriculture and rural communities. The same farm with a wind turbine also produces the corn and biomass used to make ethanol and to run factories. In addition, that ethanol can be used to run a car or run a fuel cell power plant. From the producer's perspective, the energy supplies are ultimately derived from the same resource, working lands. Over time, ag energy resources will provide affordable, diverse, stable and clean energy resources to meet a broad set of needs.

The market for energy is enormous, sometimes dauntingly so. For agriculture to make a difference it must supply a sizable portion of the U.S. demand for primary energy. Various studies have outlined the potential output that renewable energy derived from working lands can provide.[4] The numbers vary widely depending upon the study and its assumptions, but they all conclude that agriculture has a large role to play. 25 by '25 is clear, measurable and achievable.

How that supply is broken out is not yet clear. There are competing uses for various ag resources and different end uses competing for energy supplies. Over time, markets, rural entrepreneurs, improving technology and real-world considerations will funnel ag energy resources to the right places. Actively pursuing the 25 by '25 goal is needed to accelerate the process of solving American's energy challenges.

Local and Producer Ownership: Growing the Dollars

The vision of the Midwest Ag-Energy Network is also more expansive than simply shifting the mix of commodities U.S. agriculture supplies to domestic and global markets. As agriculture supplies the U.S. with a secure supply of affordable energy, it can rebuild the economy of rural America. Agriculture is competitive, and has for the better part of a century seen bigger machines replace human labor on the farm. This clearly has benefits — lower-cost food, and

3. U.S. DOE EIA much of the biomass is wood utilized in the forest products industry http://www.eia.doe.gov/emeu/aer/txt/stb0103.xls

4. Robert Perleck et al, *Biomass Feedstock for A Bioenergy and Bioproducts Industry: The Technical Feasibility of A Billion-Ton Annual Supply;* Oak Ridge National Laboratory, April 2005. Nathaniel Greene, et al, *Growing Energy: How Biofuels Can Help End America's Oil Independence,* Natural Resource Defense Council, April 2004.

higher standards of living for the remaining farmers. It clearly has pitfalls, however. Individual farmers are constantly forced to cut expenses and expand production, in the face of relentless competitive pressure. They have to outbid neighbors for farmland, take on new debt, and continually improve marketing and management of every aspect of the farm. Fewer and fewer farms and farm workers support rural businesses, banks and other institutions. Towns are struggling to survive as businesses and institutions fade. Increasingly, those fading town jobs are critical sources of health insurance and second income for family farms. Numerous studies document the reality. Rural people see every day that there are fewer people to make funeral lunches, serve on fire departments, and fewer stores to serve basic needs.

Simply shifting the mix of low value commodities produced on farms will not solve rural economic problems. The process of supplying ag products in a competitive market will always seek to squeeze profits and margins. Operators will continue to invest in more efficient production systems and drive costs down to improve individual profits. Purchasers will continue to exercise market power and pursue other strategies to ensure that they have access to agricultural commodities — be they for food, fuel or fiber, at the lowest possible prices. Rural America needs to add value to its commodities, but it also needed to keep value from those commodities.

Rural communities have learned that ownership matters. The Midwest Ag Energy Network is committed to creating the dynamic and competitive ag-energy industries where farmers, rural business leaders and community members invest in their own futures. The National Corn Growers Association issued the report "Taking Ownership of Grain Belt Agriculture." This report outlines the broad farmer lead movement to develop, own and operate a wide range of value-added ventures. Although ethanol is the most prominent example, meatpacking and soybean processing are also mentioned. "Taking Ownership" points out that the local ownership and investment contrasts most of the other U.S. manufacturing industry, which migrated overseas during the same time period. The report highlights the new generation co-ops, limited liability partnerships, and hybrid organizations and documents the growth of this business model, from just a dozen or so in the early 1980s to several hundred ventures today.[5]

Ownership matters for rural development, particularly in the capital-intensive energy industries. Locally owned and cooperatively developed projects are superior in many ways to other forms of rural development. First, while a processing plant or wind project will create wealth, the ownership will determine where that wealth accumulates. Outside ownership will draw the new wealth back out of the rural area. Leaving behind only what it has to pay in wages, land rent and taxes. Local ownership, allows the wealth to accumulate locally. As this new wealth accumulates, it is can be plowed back into new investments — creating yet more jobs and wealth. In this way ownership accelerates the "multiplier effect" so often hyped with economic development projects. The multiplier effect results from wages, taxes and other local expenditures cycling through the local economy.

Ownership accelerates the multiplier effect by creating a new source of wealth to invest in yet more projects locally. Energy projects are exceptionally capital intensive requiring millions of dollars capital investment per job created. For that reason, ownership is a more critical issue in

5. National Corn Growers Association Task Force Report, "Taking Ownership of Grain Belt Agriculture," p. 11. Also available on their website at http://ncga.com/public_policy/takingOwnership/index.htm

the energy field than service or even manufacturing enterprises — where labor and other inputs capture more of the total wealth created.

Local owned ag energy projects can be an engine that turns the vicious cycle of rural decline into a virtuous cycle of rural development. David Morris, a long time supporter of farmer owned ethanol plants, makes a simple illustration using biorefineries. He looks at an example of an in-state oil refinery and a locally owned biorefinery. In Minnesota, there are both kinds, and both hire local workers. The single most expensive input, of course, is the raw material. Oil comes from out of state, or out of the country, while biorefineries source the raw material from 50–100 miles of the facility. Most of the profits earned and the services needed (legal, accounting, etc.) affect a local area with a biorefinery. When looking at the final product, the gasoline or ethanol, for every dollar that a Minnesotan would spend on gasoline, excluding state taxes, some 75% leaves the state economy. Purchases of local ethanol, on the other hand, return 75% to the state economy. In 2005, Minnesotans spent $3.5 billion on gasoline purchases.[6]

Yet local ownership goes farther than just sourcing inputs locally. As an example, a group of farmers in Luverne, Minnesota built a 12 million gallon ethanol plant in the late 1990s, the plant was profitable and soon expanded to 21 million gallons per year. The project leadership continued to look for new opportunities. Located in windy southwest Minnesota, the co-op spun off Minwind I and II, a farmer owned wind power project. Sixty-six farmers and community members pooled resources and installed four 950 kilowatt wind turbines in 2002. That project, too, was successful. Just two years later, the Minwind group had an additional seven 1.65 MW wind turbines up and running. The Luverne area farmers and community members continue to explore and invest in new opportunities, building off of the success of the ethanol project.

The locally owned ag energy projects, especially those that bring many farmers and community members together, build another kind of wealth: community capacity. The project leaders gain knowledge and experience in developing complex projects. This knowledge can be transferred to new projects, as in Luverne. Secondly, the community itself can see that there is possibility and potential for the future beyond waiting for the next local business to close. Other community members then begin to look at investing in new and unrelated ventures within the community. This enhances and again accelerates the virtuous cycle of rural development.

The advantages of this model are to lessen the reliance on commodity crops and prices as the sole source of revenue for rural communities. In fact, there seems to be a negative correlation between a county's reliance on farm income and that county's per-capita income growth for Midwestern states. The dollars invested in value-added processing and other ventures generate economic activity of their own, as well as circulate more dollars back into a local community than would a publicly-owned company with nationwide (or global) shareholders. Although the benefits can be great, and there are numerous success stories, there are some concerns to recognize, and solutions to propose.

Barriers and Challenges

Ag energy development will provide benefits to rural communities, regardless of ownership. There will be jobs, there will be taxes paid, and to some extent goods and services purchased

6. Morris, David. "Ownership Matters: Three Steps to Ensure a Biofuels Industry that Truly Benefits Rural America." Transcript from speech given at MN. Ag Expo in Morton, Minnesota, January 25, 2006.

locally. Yet, for ag energy development to help transform rural conditions, there must be a strong segment of the industry which is locally owned. For local ownership to work there must be four key components lined up:

- Viable products to sell,
- Access to the market,
- Access to technical assistance, and
- Access to capital.

Public policies impact the ability of locally owned projects to compete in the larger energy markets. In many cases, public policies supporting renewable energy have been intentionally or unintentionally developed to skew the market conditions to favor certain types of competitors over locally developed projects. The next section will provide a broader overview of the barriers and potential policies that will enable a diverse and competitive renewable energy supply industry.

Competition for Market Share

The market for ag energy products and resources is in a phase of explosive growth. Both market and policy responses to the energy supply problems outlined earlier in this paper have triggered a rapid flow of investment capital into renewable and ag based energy projects. This investment is the desired policy outcome. Right now markets are rapidly growing, and there is room for a lot of new market entrants. Overtime, as markets stabilize and mature, price pressures will relentlessly drive efficiencies. Locally owned projects need to secure enough market share now, to ensure a long term place in the industry.

Ethanol plants were once a field dominated by traditional grain millers, like ADM and Cargil, and local farm co-ops. The steady, but incremental growth of the market kept the interest limited to those that had a natural stake in adding value to corn. This quiet little corner of the energy industry was able to generate substantial returns. However, in 2005, high energy prices and a national renewable fuels standard, combined to create a lucrative and secure market for new plants. Capital has flooded into the industry. According to the Renewable Fuels Association data, only seven of the 44 plants currently being built or expanded are farmer owned.[7] In addition, other investment groups are seeking to gain in-roads into the industry by purchasing existing ethanol plants. This is not new, but the level of activity is growing. Global Ethanol and Australian Ethanol have purchased cooperatives or controlling interested in cooperatives to gain a foothold in the industry. Farmer owned ethanol plants are facing increasing competition, from a wide variety of investors.

The wind energy industry is an enormously diverse industry as well. Wind developers range from huge utilities holding companies, like Florida Power and Light, and multi-national companies like General Electric, to individual farmers seeking to put one turbine up on the family farm. In this case, it was large companies that lead the way in the Midwest. Farmers and local entrepreneurs saw that the opportunity was real and have worked to capture market share. Farmers and small developers are attempting to pioneer in new wind development areas that have until now escaped the attention of large developers. That said, the wind business is sensitive to scale, requires very sophisticated negotiations with customers, and has increasingly

7. The Renewable Fuels Association on-line data based of ethanol plants identifies which plants are "farmer" owned. Because of hybrid business models that mix, producer, other local and outside investor capital the data may underrepresent local investment in ethanol production.
http://www.ethanolrfa.org/industry/locations/

seen largely players wield market power aggressively. It is very difficult to purchase just one or even five utility scale wind turbines. The manufactures prefer selling equipment in very large lots, and the large developers have the resources to lock up limited production capacity. All wind developers have been negatively impacted by unstable markets, resulting from the federal production tax credit being extended for short periods and then being allowed to periodically lapse. However, smaller projects are disproportionately impacted by turbine scarcity.

It is a critical time for locally owned renewable energy projects to gain and maintain a strong foothold in energy markets right now. These industries are moving quickly, and without a growing capacity and infrastructure to develop and operate projects, it will be difficult for farmer or locally owned projects to remain engaged in the ag energy business. Energy production and marketing is a commodity business that operates on high volume and low unit margins. The industry is very capital intensive, and often very sensitive to economies of scale. As this type of industry matures, it is typical to see widespread consolidation as producers seek to squeeze inefficiencies out of every aspect of a business. Without having cooperative and locally owned businesses well positioned, they will have a difficult time maintaining significant market share over time.

Overcoming the Barriers

Barriers to achieving a vision of a large, dynamic ag energy industry that is characterized by local and producer ownership are significant. Multiple approaches are needed to over come the range of barriers including: entrepreneurial commitment to making projects happen, strong leadership and vision from rural and agricultural leaders and institutions, and smart public policy. This paper focuses on the policy tools and approaches that are needed to break through barriers to provide the ag energy solutions that America needs.

Three ag energy policy success story cases are included in Appendix A. Several key lessons can be drawn from experiences in ethanol and community wind in Minnesota and manure digesters in Wisconsin. State level leadership is needed to create a vision and capacity to ssupport development. This was a role that emerged within the Minnesota and Wisconsin Departments of Agriculture in the case of ethanol and manure digesters, respectively. Federal incentives were key to ensuring competitiveness of the wind and ethanol fuels. Targeted state policy then leveraged the federal incentives to ensure the desired outcome of local and producer investment and ownership. Finally, multiple policy tools were employed to address different specific barriers including: market making policies (renewable fuels and electricity standards), access to markets, stable pricing, production incentives, and technical assistance resources. For ag energy enterprises to broadly flourish throughout the Midwest, public policy will need to address the multiple barriers

This document seeks to outline a broad set of policy recommendations that are intended to provide direction. These recommendations seek to have enough specificity to develop policy directions. Further discussion and analysis is needed to develop specific policy proposals. Several policy recommendations included in this report have been directly incorporated from other MAEN member organizations or their affiliates, the source of those proposals is credited by footnote.

Viable Products to Sell

Ag energy technologies and products may be interesting, but they will not be positioned to address critical energy needs unless the are:

- Commercialized or nearly commercialized,
- Generally, compatible with the existing of distribution and use infrastructure, and
- Production costs are approximately comparable to conventional fossil sources of energy.

There are many fully commercialized ag energy technologies and products that are compatible with existing energy markets and can be delivered at a reasonable cost. Wind power, corn ethanol, biodiesel, manure digester, biomass boiler fuels are all ready off the shelf technologies. Biomass gasification technologies are emerging and increasingly available — and able to displace natural gas in industrial boilers. Other technologies are not commercialized. The most significant example is ethanol production from cellulose plant material. Pilot scale projects are technically successful. However, no full scale cellulose to ethanol plants are up and running in the U.S. Biomass gasification technologies are improving and coming on-line, but there are limited vendors, demonstrations and turn-key products available. In addition, plant breeding has historically focused on values associated with food and fiber markets. New plant materials are needed that satisfy energy system demands. The exception is corn varieties that are bred for ethanol production.

One of the most tantalizing technological concepts for ag energy is the idea of a "biorefinery." A biorefinery concept is based on the traditional petroleum refinery. A feedstock, in this case cellulose rich plant material, is processed and broken into various chemical constituents, and then reassembled into multiple products. This way the value of the feedstock is optimized. Traditional corn processing plants are moving in the directions of biorefinery as they seek to separate lower- and higher-value energy products (boiler fuel and motor fuel), proteins and oils.

Locally owned ag energy projects will need to walk a fine line in the innovation of new technologies. Failing to adopt emerging technology in a timely way will lock local projects out of the market. Yet, MAEN leaders are concerned about local community members taking on excessive technology risk. Failed projects do not create wealth; they consume it.

Public resources have been instrumental in developing and commercializing new technologies throughout American history. Land grant universities have produced the basic plant varieties that have driven agricultural productivity. Federal laboratories continue to develop technologies at the lab scale. Public support of private initiatives has been critical in commercializing new technologies. The MAEN echoes the National Corn Growers statement on policy priorities:

> Elevate bio-based research and technology to a national priority. Given the limits on petroleum, the use will inevitably transition from a petroleum-based economy back to a plant-based economy. Public investment in developing and commercializing the needed technologies is necessary to ensure that the transition is smooth. Commercialization must involve effective transfer of new technologies to rural commercial opportunities. Local ownership will be best supported, if new technology deployment is not limited to existing large and well-capitalized businesses.

Key Federal Policy

Farm Bill

- *Energy Title* — The Farm Bill's Energy Title has two key programs that are designed to bring biomass energy technologies to the point of commercial deployment. Full funding and reauthorization are needed to continue the necessary technical development and commercialization of Ag-Energy technologies.
- *Section 9003: Biorefinery Grants* — This program provides funding to accelerate commercialization of biorefinery technologies by cost-sharing a limited number of large plants.
- *Section 9008: Biomass Research and Development Grants* — This program supports biomass commercialization and demonstration projects of various scales, and for a wide range of biomass utilization technologies. Continued expansion of the Section 9008 program will allow a more rapid commercialization of biomass energy projects, by enabling a variety of different technology platforms and scales to be tested under market conditions.

Other Federal Programs

- The federal government invests considerable resources into ag energy programs through the network of National Laboratories, such as the National Renewable Energy Laboratory at Golden, Colorado and Oak Ridge National Laboratory at Oak Ridge, Tennessee. Continued investment in the DOE Labs is critical to keep technical progress moving forward. Full funding of authorized biomass and renewable energy research and development in the Water and Energy annual appropriations process.
- U.S. DOE efforts to commercialize new biomass conversion technologies must offer partnerships to existing cooperative and locally owned value added processing ventures. Such technology development and transfer can build upon the National Renewable Energy Laboratories "Bridge to Corn Ethanol" program.
http://eereweb.ee.doe.gov/biomass/publications_presentations.html
- Research and development in utilizing a wind to hydrogen platform to manufacture Nitrogen fertilizer is needed to ensure that the U.S. is nitrogen self-sufficient, and to ensure that vast wind resource of the upper great plains can be productively utilized.
- Annual Water and Energy appropriations bills are important to agricultural leaders in ensuring that continued investments are made in biomass technology development.

Key State Policies

- Assist existing businesses with costs of detailed techno-economic assessments required to integrate biorefinery technologies into existing industries.[8]
- Create a state matching fund program for bioindustry research, development and demonstration with special attention paid to implementing a strategy for handling intellectual property issues.[9]
- Provide state incentives or risk mitigation strategies for the first in-state, commercial installations of biorefinery technologies.[10]
- Support land grant university investment in long term plant breeding programs that will produce the next set of new crops — perennials and annuals needed to generate the

8. Energy Center of Wisconsin, *Draft Policy Recommendations Developed for: Wisconsin Governor's Consortium on Biobased Industry*, December 6, 2005

9. Ibid.

10. Ibid.

volume of biomass needed to support the return to an energy economy based on agricultural and forestry products.

Access to Market

Energy industries and markets are large and dominated by established players that are well capitalized and supported by massive existing infrastructures. In addition, many of the existing energy industry players have considerable market power and capacity that they can use to retain competitive advantages. Ag energy will continue to need considerable public policy support to expand into those energy markets, and to develop the capacity to utilize or build separate supporting infrastructures. Strong markets access means that the product can be sold and delivered to consumers.

Market making policies such as renewable fuel standards, renewable electricity standards, production and consumption incentives have all opened access to markets. Yet these, markets still represent a small portion of the total energy market. In addition, there are very significant challenges with distribution infrastructure. The electric power transmission grid tends to have limited capacity between windy areas and load centers. In addition, federal rules make accessing the grid complex, expensive and challenging for small wholesale projects. Biofuels have additional challenges. Ethanol predominantly shipped by rail because of technical challenges associated with shipping by pipeline.

National Markets

Federal policy is instrumental in creating the market framework that drives ag energy development both nationally and at sub-national levels. One of the key challenges that has emerged over the years is the need for a stable market environment that enables investment to be planned and orderly in these emerging industries. This impacts not only direct investment in ag energy facilities, but also investment in the supporting industries, such as component manufacturing. Stable national policies are also needed to ensure that integrated and supporting state policies can be passed with a high degree of confidence.

Energy industries tend to be capital intensive with significant and entrenched competitors. Observation indicates that opportunities for locally owned ag energy projects are strongest in a growing or early stage market. As an industry matures and growth rates slow, it is much more difficult for new market entrants to break into the market and secure market share — locally owned enterprises are almost by definition new market entrants. However, if there is a policy framework and a supporting project development structure, locally owned projects can continue to compete.

Stable and Growing Markets

Key National Market-Creating Policies

- The Energy Bill passed by Congress in 2005, included a renewable fuels standard that will increase the required use of biofuels starting in 2006 at 4 billion gallons per year and increase that standard to 7.5 billion gallons per year in 2012. This will drive an approximate doubling of the U.S. ethanol industry. Continued expansion of RFS will continue to grow the market for ethanol, different proposals are being proposed including a 10% national standard and a 30% national standard.
- Market set-asides or credit incentives for ethanol derived from cellulose plant material have been promoted and should be incorporated into to an expanded RFS.

- Renewable Fuel Credit trading mechanisms would allow improved efficiency by encouraging more aggressive use of E-85 or B-20 biofuel blends in the Midwest near the ethanol supply. The result will be less demand on transportation infrastructure.
- EPA certification of E-20 fuels. Minnesota's implementation of an E-20 RFS hinges upon satisfactory completion of EPA tests and approvals of E-20 fuels.
- Establish a national Renewable Electricity Standard requiring that 20% of all electricity sold in the United States is derived from renewable resources. Defining renewable resources should prioritize ag energy opportunities rather than simply crediting existing installed hydroelectric power and municipal solid waste facilities.

Stable Tax Policy

- Long-term extension of the Production Tax Credit on Renewable Electricity. The Production Tax Credit expires at the end of 2007, making business planning for projects and manufactures difficult. It also enables large wind developers to control a market by purchasing available production capacity.
- Long-term extension of the biodiesel blenders credit. The biodiesel tax credit is scheduled to expire at the end of 2008. As with other ag energy sectors, a stable and predictable environment is needed to enable planning and development of projects.

Key State Policies

- Establish Renewable Fuels Standards and goals in Midwestern states
  - Establish E-10 and B-5 Standards for Gasoline and Diesel Fuels respectively.
  - Expand E-10 Standards to 20% Net RFS (Combined E-10 and E-85 sales).
- Expand state government fleet use of biofuels — through procurement of flex fuel vehicles, diesel vehicles and through legislation or executive order requiring substantial reduction in petroleum use in state vehicles.
- Establish bio-based product procurement standards and requirements for state governments based on the Great Plains Institute model legislation.
- Create additional incentives for private fleets to install biofuel-fueling capacity.
- Establish state renewable electricity standards: Midwestern states are best positioned to utilize renewable energy resources. Aggressive goals of at least 10 percent renewable electricity over the next decade will be needed to continue driving ag energy alternatives in the coal-dependent Midwest electricity market. Attention to details and structures of the industry are critical to ensure that local ownership is enabled by RES type legislation.

Key Policies to Create Access to Markets

Key National Policies

- Extend tax credits for installing E-85 and B-20 Fueling stations, which are set to expire on December 31, 2007. Continued development of the infrastructure to market biofuels is critical in the long-term ability to expand the industry.
- Accelerate deployment of flexible fuel vehicles to expand the capacity to use of E-85 fuels.
- Continued commitment to the Public Utilities Regulatory Act that ensures qualifying renewable energy facilities (up to 80 megawatts) can interconnect and sell energy into utility markets.
- Establish directions to FERC to streamline and reduce the cost of interconnecting smaller locally owned wind and other renewable projects to the electric energy transmission infrastructure.

Key State Policies

- Continue and expand incentives for the installation of a growing network of E-85 and biodiesel refueling stations. Without widespread and convenient fueling locations, high blend biofuels will have difficulty breaking out of a niche market status.
- Several states have worked on establishing strong and effective standard interconnection rules for small and distributed electrical generators (under 10 MW). This is needed to ensure artificial barriers are not implemented to ag energy projects.
- Robust pricing systems are needed to ensure that ag energy projects have the opportunity to negotiate and secure power purchase agreements with electric utilities. These can include utilization of a base fixed rate tariff or a dynamic mechanism such as Minnesota's Community-Based Energy Development Tariff.
- Net metering is an incentive to support relatively distributed and "behind the meter"installation of qualifying renewable energy resources. Rules are set state by state. In most Midwest states, net metering is limited to a relatively modest sized generator: 20–40 kW. Several states have amended or expanded net metering laws to support more aggressive on-farm energy production. Vermont allows net metering for manure digesters of up to 150 kW and New York allows 400 kW manure digesters to qualify.
- Commercial scale net metering: New Jersey and California have established very high limits on net metering (2 MW and 1 MW respectively) to support commercial scale projects. Implementing a net metering law similar to New Jersey's will facilitate installation of wind energy at large rural power loads such as ethanol plants and other value-added enterprises.

Fair Competition

Historically policy that sought to address and mitigate the negative consequences of tradi-tional fossil fuels have benefited development of ag energy markets. The Clean Air Act and its requirements for less polluting gasoline created a strong market for ethanol fuel. Nearly two-thirds of the gasoline sold in the U.S. is now "reformulated," which has included a requirement for oxygenates. Several states have banned MTBE, a fossil-based oxygenate, over environmental concerns as well — which drives market expansion for ethanol. These policies continue to open up ethanol markets. Similarly, the low sulfur diesel fuel standards are helping create market acceptance for biodiesel. Biodiesel can make up for the lubricity loss associated with removing sulfur from diesel fuel. In Minnesota, the state renewable fuel standard evolved out of a requirement for winter time fuel oxygenate in the Minneapolis/St. Paul metropolitan area intended to reduce concentrations of carbon monoxide pollution. Renewable standards are broad mechanisms that serve as a proxy, but specific measures such as carbon dioxide limits, regulations or taxes would also potentially dramatically shift attention to ag energy resources that are low carbon or even net negative carbon-emitting energy resources.

Key State Policies

- Creation of strong state policies to incorporate "externalities" in the integrated resource planning and permitting processes of electric utilities. By quantifying and comparing economic costs of pollution from power plants, externalities laws shade utility resource selection more in favor of wind and biomass resources.

Access to Technical Expertise

Locally owned ag energy ventures will frequently have core leadership that is new to the industry, and in need of substantial technical assistance to succeed. Eventually, it is likely that ag energy enterprises will spawn new endeavors and be able to build upon the business experience and knowledge of the first projects. However, there continue to be first projects in community after community. Technical assistance in project development is critical to make sure that sound business plans are developed and that appropriate legal structures are selected to ensure the success of the venture and the strong local benefits to the host communities.

Key Federal Policies

The federal government supports several programs that directly or indirectly provide technical assistance for business development in rural areas. These programs include support through the Small Business Administration, the U.S. Department of Commerce Economic Development Administration support for Economic Development Partnerships Cooperation and Coordination, and various USDA programs. Continued funding of economic development infrastructure is necessary for locally owned ag energy enterprises to continue to thrive.

Farm Bill

- *Value-Added Producers Grants* — This program, found in the Rural Development Title of the Farm Bill, is a critical resource for developing new projects, particularly new projects with innovative technical or organizational aspects. Continued full funding and expansion of the appropriations is needed to continue to facilitate the development of innovative ag energy projects.
- *Rural Cooperative Development Program* — This program supports a network of professional business developers around the country that are available to assist with new venture development. Strengthening the existing network of technical assistance resources is needed for cooperative and locally owned development of ag energy enterprises. Expertise is needed at an early stage to support business development planning that can manage complex and difficult issues associate with organizational structure, governance documents and the utilization of different sources of equity capital.

- Additional resources are needed to not only provide technical assistance to the principal project developers, but to provide resources and assistance to potential producer/investors. Resources to support sound decision making, is critical if the below discussed policies to ease securities regulations are successful.
- Increase technical capacity within USDA to provide technical assistance for ag energy development.

State Policies

State and local government also invest considerable resources in the economic development infrastructure that is needed to provide new enterprises with the technical assistance necessary to develop sound business plans. Most of these resources are not directly targeted toward ag energy ventures, but can provide basic services.

In addition most Midwest states are supporting various specialized energy or agricultural resource centers that can provide additional technical assistance that compliments general business development assistance.

- Create and continue to support state-based specialized research, development and commercialization programs such as: Agricultural Utilization Research Institute (MN), Biomass Energy Conversion Center at the Iowa Energy Center, Energy and Environment Research Center (ND) and Center for Energy Sciences Research, (NE).
- Create and participate in an Upper Midwest Consortium on the Bioeconomy (per Wisconsin Governor's Consortium on Biobased Industry Policy Recommendations).[11]
- Strong state government leadership that works with ag energy industries, universities and agricultural organizations is needed to continue to identify barriers, access opportunities, and build a shared vision that enables entrepreneurs. State leadership should be cross cutting to bring various regulatory and development agencies in line to ensure that sound ag energy enterprises can move forward.

Foster and fund value-added education and rural entrepreneurship: Resources can be provided by existing cooperative development providers, land grant universities, USDA, state departments of agriculture, or other non-profit organizations.

- Establish continuing education for value-added agriculture[12]
  - Provide and conduct e-learning/seminars for producers to understand co-op and business structure laws.
  - Provide and conduct e-learning/seminars for producers to learn how to write and effectively evaluate business plans.
  - Provide and conduct e-learning/seminars for producers on basics of investing.
  - Provide resources for co-op Board of Director education.
- Establish a rural development entrepreneurial online library (web information). This could involve a clearinghouse that links all available resources for value-added agricultural marketing.[13]

Access to Capital and Getting the Incentives Right

There is substantial potential investment capital and access to debt financing through a variety of market and public resources for rural development projects. However, energy projects are very capital intensive and can stretch the available resources in any given rural community. Community banks in particular can quickly be pushed out of financing ag energy projects as lending limits are exceeded. In addition, large project developers, investment companies and multi-national companies have the ability to rapidly access capital and development resources. Locally owned projects that require new leadership project by project and which must pool and aggregate capital from small investors must compete against the resources of national and global competitors. To ensure that locally owned projects are competitive policy must be structured so that they can successfully and efficiently bring equity and debt financing together to get projects built in a timely manner.

Incentives must be designed to enable producer and community investment, and at the very least provide an equitable playing field. The classic example of an incentive that limits producer and community investment is the Production Tax Credit driving the wind industry. It is exceptionally difficult to utilize the PTC, without an outside C-Corporation as an equity

11. Energy Center of Wisconsin, *Draft Policy Recommendations Developed for: Wisconsin Governor's Consortium on Biobased Industry,* December 6, 2005

12. National Corn Growers Association, *Taking Ownership of Grain Belt Agricutlure: How Producer Self-Reliance is Transforming Rural America.* [2005]

13. Ibid.

partner. As part of getting incentives right, policies must be well designed to actually pay for the desired outcome. In addition, the federal Small Business Administration's 504 loan program, a stable for rural economic development, has rules that do not allow wind projects to use it for gap financing or to improve blended rate and term for debt financing available from local banks.

For example, the State of Minnesota, established several policies to incent local ownership of wind projects. However, the policies used project size rather than ownership structures as the basis for the policy. The result was a number of small wind projects that were not necessarily locally owned — until the policy was revised and amended. In addition, using a proxy such as size for incentives can lead to projects being developed based on incentives rather than economics. The federal Small Ethanol Producer Incentive has recently been revised to allow much larger ethanol plants to qualify. Because, even producer owned projects are now being sized at 40–60 million gallon per year capacity.

Tax Policy

- The Production Tax Credit for renewable electricity is discriminatory to many potential sources of capital, particularly community-based investment capital. This is a barrier that is difficult and frustrating to locally owned development projects. It often limited the amount of local equity that can flow into the projects, and increases the reliance on external capital. Long term modifications, such as making the PTC or a portion of the PTC applicable to ordinary income would be a benefit. While reform of the PTC is desirable, long-term extensions of the PTC are a higher priority.
  - Extend the application of the PTC to the Alternative Minimum Tax for the entire 10-year PTC benefit period. Even in the cases, were local investors have adequate passive income to create a tax liability, the ATM prevents effective use of the PTC.
- The Institute for Local Self Reliance has suggested that the federal consumption incentive for ethanol — 51 cent per gallon tax credit — be reduced by at least 50 percent. Then in its place, a federal production incentive targeted to locally owned facilities be established.[14]
- Tax advantaged financing instruments: PTC inequities can be in part made up for through the use of various tax advantaged financing tools
  - *Authorize Clean Renewable Energy Bonds* — The Energy Policy Act of 2005 authorized $800 million worth of bonds available to government entities and rural electric cooperatives. These bonds are available for 0 percent interest, investors are paid interest through tax credits. It is estimated that the value of the CREBs is approximately ¾ of the value of the PTC, for which non-tax paying entities are not eligible. Annual authorization of CREBs financing would enable a stable market for public and cooperatively owned renewable energy projects.
  - Support the Renewable Energy Finance Coalition proposal to make renewable energy eligible for private use tax-exempt bonds (NOTE: the REF Coalition includes refined coal, municipal solid waste, qualified hydro-electric power which are not specifically ag energy resources.)[15]

14. David Morris, *Ownership Matters: Three Steps To Ensure A Biofuels Industry That Truly Benefits Rural America. Institute for Local Self Reliance*, February 2006. www.newrules.org/agri/ownershipbiofuels.pdf

15. www.refcoalition.com

Farm Bill

- *9006* — Expansion of the 9006 program is critical to facilitate expansion of a wide variety of smaller scale ag energy enterprises, including on-site wind energy, small-scale biomass projects, and manure digesters. Full funding through the current Farm Bill cycle and expansion of the program in the next cycle are needed to continue to drive a variety of ag energy programs forward.
  - The 9006 grant program does impact the ability of a wind, or other eligible technology to use the federal production tax credit. While concerns have been raised, the impacts do not seem to outweigh the benefits of participating in the 9006 for most energy projects. However, additional analysis is warranted to determine if 9006 funding can or should be structured to reduce the reduction of PTC payments.
- *General Rural Development Programs* — The Rural Development Title of the Farm Bill provides several significant economic development programs that make resources broadly available rural enterprises, including ag energy projects. Continued funding of the Rural Development title, particularly the Business and Industry Loan program, is needed through the current farm bill cycle. Re-authorization and strengthening of Rural Development programs are also needed in the revised farm bill.
- *Conservation Title* — The Conservation Security Program includes enhancement payments for producers that are actively using or producing renewable energy products. Continued expansion of the CSP program is needed to ensure wider allocation of these resources.
- Section 9010 of the Farm Bill is the Bio-Energy Program that was authorized for 2003–2006. The Bio-Energy program reimburses ethanol and biodiesel plants for a portion of the feedstock utilized. This program provides cash payments that stabilize first-year income after a plant is placed into operation or expanded. Continuation of the program will provide risk mitigation for new biofuels projects and should be continued.

Energy Bill

- Extension of the Small Ethanol Producers Tax credit of 10 cents per gallon. This incentive is applicable to ethanol plants of up to 60 million gallons annual capacity, but can only be taken on the first 15 million gallons per year production. The incentive can be passed through agricultural cooperatives to members, and be applied to the Minimum Alternative Tax. The Energy Policy Act of 2005 extended the credit through 2010.
  - Size is an inefficient proxy for ownership. In lieu of extension, the Small Ethanol Producers Tax Credit could be redesigned so that it creates an incentive for locally owned projects, rather than ethanol plants of less than 60 Million gallons annual capacity. The payment can still be limited to the first 15 million gallons.

SBA Lending Programs

- Community-based wind projects have approached SBA 504 lenders and have not fit program requirements well on several points. The 504 loan program is a cornerstone economic development finance tool. 504 or 504-like loan products are needed to make traditional gap financing and blended term and rate benefits that other business development projects enjoy through the 504 available to wind and other ag energy projects.

State Policy

State incentives can be successfully built to leverage federal programs and incentives for locally owned renewable energy projects.

• *Community wind energy incentives* — Iowa and Minnesota have both successfully used financial incentives (tax credit and cash payment respectively) of about 1.5 cents per kWh to initiate locally owned wind markets.

• After paying cash incentives on 200 MW of small scale wind projects, Minnesota relieved tax payers of further liabilities by establishing the "Community-Based Energy Development Tariff." The C-BED Tariff is a tool that creates a financial framework for utilities to negotiate with qualified wind projects. The C-BED program is not limited in size, and projects are optimizing at 10–20 MW. As locally owned wind development capacity develops in specific states, C-BED type structures can replace financial incentives.

• *Cooperative Investment Incentives* — North Dakota and Missouri have passed general incentive for value added cooperative investments. These programs are not limited to ag energy projects, but would apply to many kinds of ag energy programs. Details vary from state to state, but provide tax credits for equity investments into qualified facilities. The incentives are well targeted to ensure that local producers are the beneficiaries of the incentives.

• *Ethanol and biofuels incentives* — Several states (Nebraska, Minnesota, Wisconsin) have in the past provided production incentives of up to 20 cents per gallon of ethanol. However, these have been general incentives, incentives should be modified to target them to local and producer investors.

• *Industrial fuels* — Many types of value added processing facilities are both locally or producer owned and substantial users of boiler fuels. Production incentives would facilitate the development of biomass fuel sources in these facilities. Iowa has led the nation with creating incentives for renewable boiler fuels, a tax credit of $4.50 per million Btu is available for biogas used as an industrial fuel or for electric power generation. The incentive is qualified and targeted to locally owned projects.

Cooperative Law and Structure

Considerable attention has been focused within the agricultural community about the ability to use traditional cooperative legal structures to develop ag energy ventures. The first "New Generation Co-ops" developed to produce ethanol have used the traditional co-op laws, but have faced challenges with raising additional equity, enabling existing members to liquidate equity, and to provide adequate returns on capital investment. Wind energy projects are exceptionally difficult, if not impossible to develop as cooperatives. Wind projects and, increasingly, ethanol plants are being developed as limited liability companies to address capacity to raise equity from outside investors, including local but non-farmer investors. In some cases, farmer cooperatives are formed to supply and market grain, and the cooperative partners with other entities to form a joint venture that builds and operates the plant.

In addition securities regulations have presented significant barriers to involving local equity in various ag energy projects. Projects seek to avoid expensive federal securities regulation, by limiting investment to individuals from one state. They also often focus on private placements — that limit investment to predominately "sophisticated" investors that must have a net worth of at least one million dollars or $200,000 annual income. The result is that broad equity participation by local community members is limited.

Several states (Minnesota, Wyoming, Iowa and Tennessee) have enacted legislation enabling hybrid co-ops that can raise additional, outside equity. The Hybrid Co-op Laws are intended to address difficulties associated with traditional cooperative laws in establishing processing facilities. Some critiques of the statutes have been raised about the permissiveness of the statutes, and the potential for the cooperative business form to be usurped by outside investors. A process is underway through the National Conference of Commissioners on Uniform State Laws (NCCUSL) to develop a model cooperative association law enabling new generation type cooperatives, while also addressing some of the critiques of the pioneer enabling legislation. The National Corn Growers *Taking Ownership of Grainbelt Agriculture* includes several policy recommendations for enabling business structures that facilitate locally and producer owned projects.

Federal Policy

- Modify Sec. 521 of the federal tax code to recognize these new generation cooperative forms along the lines of the NCCUSL model legislation. This would allow hybrid structures to qualify for Sec. 521's preferred tax and securities status, as long as a majority of the stockholders or equity owners actually produce and deliver or market ag products for further processing or manufacturing. The proposed changes would also allow Sec. 521 co-ops to obtain outside capital and issue minority interests or issue preferred stock or equities and pay dividends of up to 18%.[16]
- Authorize federal exemptions for producer-controlled projects where state securities divisions approve offerings. A single-purpose project that has no more than 1,000 investors, less than $50 million in new equity capital and only has investors from contiguous states could be exempt from SEC filing and reporting. Right now, small projects must shoulder Enron-induced legal and accounting burdens to raise equity.[17]
- Allow rural processing ventures to qualify for New Market Tax Credits. This $3.5 billion federal program is targeted to impoverished areas that have lost population in the last census. So far, most of the rural aid has been directed at urban areas. The only success in rural areas has been low-income, senior housing. Redirecting some of those funds to rural manufacturing might generate more economic impact.[18]
- Authorize Rural Electric Cooperatives and Mutual Companies to make investments in qualified rural processing business and retain the profits without jeopardizing their tax status. Right now, 85% of the earnings must be related to the cooperative's business with members.[19]

State Policy

- Reform producer-owned business structures to improve tax efficiency, easily raise capital and offer investor liquidity.[20]
  - Authorize hybrid cooperatives using the National Conference of Commissioners on Uniform State Laws (NCCUSL) model legislation throughout the Midwest.

16. National Corn Growers Association, *Taking Ownership of Grain Belt Agriculture: How Producer Self-Reliance is Transforming Rural America*. [2005].

17. Ibid.

18. Ibid.

19. Ibid.

20. Ibid.

- Authorize markets or equity exchanges for producer controlled entities, cooperatives, LLCs, and corporations. Keeping equity liquid will encourage investment and allow for timely exits as members age.

Action Agenda

The Midwest Ag Energy Network has a broad and far reaching vision — locally owned ag based renewable energy facilities providing for the equivalent of the Midwest's energy needs as a component of supplying 25% of the nation's energy by the year 2025. Solving America's energy problems is possible but will be challenging. This document has outline a large number of state and federal policies needed to drive this vision forward. Yet, consistent and strong action is needed to move this forward. Priority actions for the near term include:

1. *Advance the Vision* — Conditions are right for a bold ag energy vision to catch on in the Midwest. Broad backing of the bold vision is required to ensure that the political will is in place to enact the policies needed for America to tap the energy potential of Midwestern Agriculture. The Midwest Ag Energy Network can provide leadership in articulating and championing that vision with farmers, ag leaders, and rural communities.

2. *Focus on the Farm Bill* — The near term option that Agriculture must make the most of is the evolving discussions of farm policy. The Farm Bill is scheduled for reauthorization in 2007 (though the current farm program may be extended for a year as an interim measure while Congress awaits the outcome of agricultural trade negotiations). The Farm Bill contains key provisions that will facilitate local ownership of ag energy projects these provisions need to be maintained and expanded.

3. Ensure that markets for ag energy projects are stable by extending key incentives such as the renewable energy production tax credit, biodiesel blenders credit and small ethanol production incentive.

4. Develop strong home state markets for ag energy products including: ethanol, biodiesel, wind and other biomass electricity projects such as manure digesters.

5. Leverage federal incentives and markets with state production incentives to locally and producer owned enterprises.

6. Invest in technology development and commercialization of cellulose based ethanol production systems and biorefineries. Ensure that existing and emerging producer owned ethanol plants have an opportunity to access new technologies.

Appendix A: Ag Energy Success Stories

Wisconsin On-Farm Manure Digesters

Wisconsin, the Dairy State, has been the nation's leader in converting cow manure into electricity. Between 2001 and March 2006, farmers brought 16 manure digesters on-line in Wisconsin. These facilities generate about 6,000 kW of power — plus offset on-farm propane use. Another five farm digesters are under construction and will supply 1,850 kW plus 400 kW of peaking generation. Fifteen additional digesters have received grants.

In addition to having a lot of dairy farms, Wisconsin provided leadership and created policies that lead to a real market for these ag energy projects. Wisconsin utilities began rolling out Green Energy programs in the mid to late 1990s, creating a voluntary market for renewables. However, in 1999 Wisconsin had established a firmer market for renewable energy in 1999, with passage of Act 9, requiring utilities supply 2.2 percent of electricity sold be renewable. In 2001, the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) formed a work group to promote on-farm biogas projects. The workgroup included farmers, state agencies, industry and utilities and Focus on Energy, an organization. This work group generated the leadership and policy needed to help make digesters a reality.

Additional policy development followed from the biogas work group. The group was standardized rules for connecting digesters and other small generators with the electric grid. In addition, two investor-owned utilities established standard tariffs (prices and terms) of about 6 cents per kWh for digesters of up to 400 kW capacity. The standard interconnection and biogas tariff dramatically reduce the cost and hassle in signing contracts and delivering power from digesters. Dairyland Power Cooperative, also established a green pricing program to enable its customers to voluntarily choose renewable energy, including manure.

The State of Wisconsin was able to provide substantial leadership and technical assistance through the Biogass work group. Additional resources were made available through Focus on Energy. Focus on Energy is an organization funded through Wisconsin's public benefits fund. A public benefits fund is generated by a small fee on each electric power user. The fund then supports investments in energy efficiency and renewable energy production, to ensure that new technologies are brought to market.

The other critical policy for moving small, dispersed power generation projects forward was establishing In addition, two utilities established standardized tariffs (prices) for manure projects of up to 400 kW, paying approximately 6 cents per kWh. Standard interconnections and power purchase terms ensure that negotiating the deals with the utility is a straightforward process.

Minnesota Corn Ethanol

Minnesota ethanol production is a local owner success story in setting public. The Minnesota policy framework was developed over several years and included market development, production incentives, financing assistance and technical assistance. The first policy adopted in

Minnesota was to reduce the gas tax for E-10 fuels, worth 40 cents per gallon of ethanol. This increased ethanol consumption, but tended to draw more ethanol from existing production facilities into the Minnesota market. In 1986, policy was shifted to encourage production by establishing a 20 cent per gallon incentive payment. The blenders credit was finally phased out in 1997.

As oil prices declined in the mid 1980s, ethanol became less economic. However, the federal Clean Air Act created a new market driver for ethanol. Carbon monoxide levels in Minneapolis and St. Paul exceeded federal standards. In 1991, the Minnesota legislature required gasoline sold in the Twin Cities Metro area during the winter months to be oxy-genated. This stabilized and grew the in-state demand for ethanol. The Minnesota legislature expanded the winter oxygenate requirement twice in subsequent years resulting in a year-round state wide 10% Renewable Fuels Standard. Ethanol use grew from a few million gallons to over 250 million gallons per year.

At the same time, established an incentive program for ethanol production, that was designed to support small ethanol plants. Payments of 15 to 20 cents per gallon were made for the first ten years of operation. However, payments were capped at $3 million per plant per year. The policy environment, and market conditions were ripe to attract the interest of farmer-investors. The 1990s was also a period of low oil prices and a information technology boom. Energy projects were not on the radar screen of many large investors. Farmers, seeing ethanol as an expansion of their business, had much of the market to themselves.

The State of Minnesota also provided other important supports. The Minnesota Department of Agriculture operated a stock loan program that provided access to capital for farmers that wanted to invest, but did not have ready cash. The state also provided $500,000 start up loans to seven ethanol plants as well. Finally, the Minnesota Department of Agriculture provided leadership and early development assistance for early projects — before there was a developed infrastructure of development companies.

The result has been that virtually all of the production capacity developed in Minnesota, until very recently, was predominately farmer owned. This started with Minnesota Corn Processors adding an ethanol still on an established corn wet-mill in 1987. Minnesota ethanol production ramped up over the years, but still lagged ethanol consumption in Minnesota until about 2001. At that time, Minnesota became a net ethanol exporter. Currently 16 ethanol plants produce over 500 million gallons of ethanol per year.

Minnesota Community Wind

Minnesota's community wind program is emerging as another success story for local ownership. As with ethanol, Minnesota passed laws that created strong markets for wind power projects. The first significant development driving wind energy was a legislative compromise allowing the state's largest Utility, NSP (now Xcel) to build new storage facilities for spend nuclear fuel at the Prairie Island Power Plant. The other part of the 1994 deal was that NSP was required to develop 825 MW of wind energy and 125 MW of biomass power plants. Then in 2001, the Legislature passed the Renewable Energy Objective, requiring all utilities to make a "good faith effort" to supply 10% of their sales with renewable energy. For Xcel, the REO is stacked on top of the Prairie Island Mandate. The result is a total state market for wind energy

that approaches another 1,500 MW over the next decade, over and above the approximate 750 MW currently on line.

From the early in the emergence of a strong wind market, rural economic development advocates and a veteran small wind developer began to advocate for policies that leveraged the economic development potential of wind. The approach was two fold; 1) increasing the local taxes on wind projects (which had previously been exempted), and 2) creating opportunities for local investment and ownership.

Several incremental policies were established to foster smaller locally owned projects. First, local taxes were broken into 3 classes, with small 2 MW projects paying the lowest rate and projects greater than 12 MW paying the highest rate. Eventually Xcel Energy was required to establish a standard purchase prices for wind projects under two MW. It was not, however, until passage of a 1.5 cent per kWh incentive payment, that locally owned projects began to really take root in Minnesota. The 1997 Law provided the payment to wind projects of less than 2 MW for the first ten years of operation. The initial appropriation authorized enough funding for 100 MW of wind projects. By 2004, the incentive was fully allocated. In 2004, the legislature authorized another 100 MW, which was fully allocated within several months.

The incentive was originally available to projects of 2 MW or less located in Minnesota. However, several projects were developed — some times referred to as "phony twos" that were owned by outside developers. The statute was modified to create tighter eligibility criteria that would better ensure true locally owned projects benefited. Over a seven-year period approximately 200 MW of community owned wind projects were developed (or will soon be completed).

In 2005, continuing budget problems in Minnesota prevented further funding of the small wind incentive. Instead the Legislature passed the Community-Based Energy Development Tariff. C-BED provided direction to utilities to negotiate with qualified locally owned projects, and to structure contracts in a way that facilitates viable cash flows. The community wind capacity developed under the incentive program has allowed several hundred more megawatts of community wind capacity strike deals with utilities, particularly Xcel Energy.