

# Michigan's Energy Future: Is There a Role for Woody Biomass?



## Issue Guide

MICHIGAN STATE  
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### **Community Issue Forums:**

*This issue guide was prepared by a partnership between Michigan State University Extension and the Michigan Agricultural Experiment Station.*

*The purpose of this issue guide is to provide citizens with information to support locally initiated public conversations about the role of woody biomass in Michigan's future. Issue guides are most successful when used in public forums where citizens can explore together the challenges required to make responsible decisions to move toward a sustainable future.*

*This issue guide is divided into three sections. We begin by laying out a brief description of the development of biomass in Michigan. We then present three approaches to addressing challenges presented by biomass harvesting, production and conversion. In a nutshell, these are three different positions or points of views that are commonly held on this topic. Lastly, we have included a questionnaire for you to give your input into this topic.*

*Even though we are all consumers of energy and are affected by it in different ways, this issue guide will provide background information to help citizens take a fresh look at familiar problems. As citizens make decisions about what is in store for our energy future, they will be making judgments about the fabric of public life.*

### **Accessing this Document:**

*Additional copies of this document may be retrieved free of cost at the Michigan Food Democracy Project website: [www.fooddemocracyproject.org](http://www.fooddemocracyproject.org). The eight minute video, "Biomass in Michigan's Future?" can also be downloaded from this website. Both the video and issue guide should be used in tandem to provide citizens the tools to best understand these issues. For additional support in organizing a conversation in your community, contact Wynne Wright 517-884-1372.*

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# Michigan's Energy Future



## Introduction

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Something new is happening in our relationship to energy in Michigan. Residents believe it is time to make some difficult decisions about our energy future. Talk of biofuels, biomass, and biodiesel frequently figure prominently in discussions from legislative corridors to small town cafés. One look at the media and we might conclude that something distinctively new is on our energy horizon. Consider the following newspaper headlines: “Wood Burning Power Plants Picking Up Steam in Great Lakes States,” “Buzz About Dow Corning Biomass Facility a Boon to Midland,” “Hundreds Turn Out to Question Biomass As Renewable Energy,” “Study Questions Biomass' Ability to Cut Greenhouse Gases.” Have these headlines captured the essence of this debate? Is the issue of using biomass as an energy source that black and white? Or do these headlines gloss over the many complicated considerations we as citizens must make to ensure a sustainable energy future? The answer is unclear, but these headlines

do reveal that Michigianians are not only reconfiguring their relationship to energy, they appear to be uncertain as to how they should go about charting a sustainable energy future.

Such confusion leaves citizens asking hard questions, “How should we fuel our energy needs? Can biomass be a part of a sustainable future? Will biomass production and conversion create jobs for our communities or will it simply shift jobs from one area of the economy to another? How will we treat our forests? Can the forests serve all our needs – wood, paper, energy, recreation, and biodiversity? How do private land holders figure into new supply chains? What are the economics of these new enterprises? What will be the impacts on our state land, communities, our farms, and our water quality?” As things stand, there is broad agreement that change is needed, and even long past due. Concerns about loosening our ties to Middle Eastern fossil fuels are commonplace, as is our desire to ensure we improve our impact on the environment. There is little agreement, however, about how to achieve these demands given current realities.

### Setting the Stage

The Great Lakes states are coming under increased public and institutional scrutiny to develop alternative forms of energy, in part because they are ranked among the top in the nation for greenhouse gas production. High levels of greenhouse gas emissions are linked to the over one hundred and fifty coal plants operating in the region. In forested states such as Minnesota, Wisconsin, and Michigan, locally available woody biomass may be part of a renewable energy solution.

Biomass is any organic material. It is derived from living, or recently living organisms, such as plants as well as animal and vegetable materials. When people talk about woody biomass, they are specifically referring to any wood based material that is suitable for supplying energy production. The State of Michigan defines woody biomass as a renewable resource capable of being “replenished over a human, not a geological timeframe.” That means biomass is renewable through natural processes or from human activity, such as planting perennial crops.

Woody biomass consists mainly of whole trees which have little economic value in other sectors of the economy. It also refers to the residue from logging, such as left-over tree tops or limbs. Lastly, woody biomass can also refer to fast growing perennial varieties of trees and grasses. Examples include switchgrass, poplars, and willow.

Biomass is used for generating electricity to power our homes and workplaces. It can also be used to produce fuels and other consumer products. To achieve renewable energy goals, technologies such as wind and solar are being implemented, but for a state half covered in forests with millions of acres of fallow farmland, woody biomass is being heavily promoted.



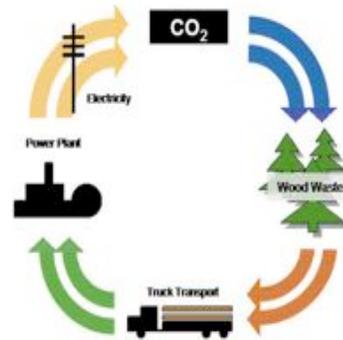
Many believe woody biomass is capable of supplying a continuous supply of electricity, whereas other technologies, although less polluting, can only supply intermittent power.

When compared with the fossil fuels that traditionally supply the state’s power, woody biomass is less energy dense and more expensive to transport and store. To meet this energy gap, federal and state grants and incentives are being implemented to encourage market development. Without such policy support, renewable energy technologies are cost prohibitive. The following table highlights some of the federal and state legislation that has enabled the development of biomass energy production.

<b>Policy</b>	<b>Governance</b>	<b>Year</b>	<b>Intent</b>	<b>Result</b>
Clean Air Act	Federal	1970	Reduce pollution from fossil fuels	Stabilized a biomass market
Public Utility Regulatory Policies Act	Federal	1978	Encourage use of wood waste for energy	Development of first wave of wood burning electricity generating plants
Energy Policy Act	Federal	2005	Promote use of biomass	Industry growth
Energy Independence and Security Act	Federal	2007	Mandate energy production from biomass	Industry growth
Food, Conservation and Energy Act	Federal	2008	Provide Biomass Crop Assistance Program (BCAP)	Incentive to supply biomass to industry
American Recovery and Reinvestment Act	Federal	2009	Provide Tax Credits for private developers of new or retrofitted biomass facilities	Heightened number of proposed new and retrofitted biomass plants
Clean, Renewable and Efficient Energy Act	State	2008	Established a Renewable Energy Standard for the State of Michigan	Mandates 10% of the state’s electricity to come from renewable resources by 2015
45 by 20	State	2009	Reduce Michigan’s reliance on imported fossil fuels 45% by 2020	Impediments to permitting new coal fired power plants

Federal legislation in 2007 and 2008 introduced mandates and incentives to produce cellulosic ethanol and also electricity from wood. Pending legislation also seeks to introduce mandates for the production of renewable electricity. The greatest single policy incentive, responsible for much today’s push to develop new biomass facilities, results from a federal tax credit reimbursing thirty percent of a developer’s capital investment, in cash, for projects that begin operation before December 31, 2013.

In 2008, Michigan set a “Renewable Portfolio Standard” calling for ten percent of electrical production to come from renewable resources by 2015, setting a course for a forty-five percent reduction of coal generated electricity by 2020. Additionally, some communities are setting their own goals for reducing the use of nonrenewable resources and increasing energy efficiency in the hopes of reducing energy costs and the use of coal along with increasing local economic development.



To combat current physical and technological limitations of biomass, government, industry, non-profit organizations, and universities are working to research and develop new processes, technologies and infrastructures. Since September of 2007, the U.S. Department of Energy has funded laboratories across the country where these diverse sectors work together to develop new products, methods and tools the emerging industry can use. Michigan State University is home to one such center. Additionally, along with Michigan Technical University, researchers from the two universities are undertaking a comprehensive inventory of the state’s biomass and forest resources.

In light of these recent political, technological, and social developments, a number of biomass facilities are in the pipeline, seeking to incorporate multiple technologies, products, ownership models, and distribution networks. Some proposals advocate privately owned, mid-sized “stand-alone” generators, offering modest efficiencies at relatively low costs. Other proposals are advancing smaller, more advanced and efficient combustion technologies forwarded by municipalities and district energy cooperatives. Beyond electricity, wood is being promoted as a direct replacement to fuel oil and coal on small scales across northern Michigan’s schools, universities and hospitals. And on a much larger scale, some believe wood has a role in advancements in ethanol production in the form of cellulosic ethanol, with a state-of-the-art facility proposed in the Upper Peninsula.

Using wood for energy is not a new idea. Since the retreat of the glaciers, people living on the land now known as Michigan have used the local forests. Michigan forests fueled the industrial revolution as the nation’s leading supplier of lumber the latter half of the 19th century. During this time, copper and iron ore mining booms contributed to non-renewable levels of resource consumption, fostering a new era of conservation beginning at the turn of the twentieth century, which foresters believe has steadily replenished forests. While people have often used wood to heat their home or businesses, the energy crisis of the 1970s, coupled with increased public concern for the negative environmental attributes associated with fossil fuels, led to federal laws which encouraged the use of wood for distributed electrical production.

As a result, six Michigan based wood-burning electrical plants, producing around 30 megawatts of power each for distribution to in-state utilities, began operating during the 1980s and 90s. These plants were fed by “waste wood” from nearby forest industry

operations, once a successful industry in the state. Although still in operation today, these electric plants face new challenges in procuring wood with the steady decline of the state's forest industry.

Today, many federal, state, industry and community leaders and decision-makers are championing woody-biomass energy production as a means to supply renewable energy while creating jobs and building local economies in a state reeling from the loss of 400,000 manufacturing jobs since 2003. Academic and state foresters point out how the decline in forest-based industry along with an increase in forest productivity has led to an excess of wood capable of supplying a steady stream of woody-biomass to a new renewable energy



economy. Government and community leaders are interested in utilizing this locally available and potentially cost effective resource in lieu of continued reliance on fossil fuels such as coal. Loggers too are excited at the prospect for a new market to sustain their livelihoods.

Statewide, a general consensus has largely been reached about the need to reduce the use of fossil fuels and increase renewable energy production. How to meet this goal, however, remains contested.

At the heart of these differing views is a concern for sustainability. When we speak of sustainability we want to make sure that we are using our natural resources in ways that do not threaten our economies, or the environment, or create social/cultural problems. Can we fulfill the energy needs of the present generation in an economically lucrative way that does not damage natural resources or threaten social relations? If so we will be protecting opportunities for future generations to benefit from our natural resources in much the same way we have. Whether we can achieve this vision of sustainability remains a question.

### **We're in It Together**

Our energy challenges remind us that we are linked together in a global human community and that what impacts us in one state or nation can have ripple effects and impact others in ways we never intended or even considered. Challenges associated with our energy future are topics that cannot be solved in isolation. Yet, before people can act together, they must talk to each other. One way to begin tackling these difficult issues is through public deliberation. Public deliberation involves people talking face-to-face in a way that allows all points of view to be heard, generates respect among participants and acknowledges that there is strength in the diversity of perspectives. In this way, communities can make sound decisions that build on the best and brightest ideas available.

### **Considering the Role of Woody Biomass in Our Future**

This issue guide is intended as a catalyst for community conversations. In this issue guide, we use the case of woody biomass production and conversion as an entrée into the conversation.

In the next three sections we present three major approaches, or choices, for addressing the role of woody biomass in Michigan's energy future. Each approach sees the world a bit differently and makes claims that support a different understanding of the challenges before us and diverse strategies for implementing woody biomass into our energy needs. These options are not meant to be exhaustive; they provide a window into the critical issues we face and the tensions and challenges that accompany each course of action. Each approach is laden with diverse values and assumptions about human beings and social action that underpin their recommendations. Each approach also embodies tensions and struggles that draw our attention to the sacrifices, or trade-offs, that are required when we choose one path over another.

### **Approach One: Multiple Benefits from Woody Biomass<sup>1</sup>**

Supporters of this Approach say that it is long past time for us to stand up and take our energy needs seriously. Growing longevity in industrialized countries and annual population growth suggests that the world will need more and more energy to meet our global needs. Where will it come from? To meet the growing worldwide demand for energy, we must look to alternative and renewable sources of energy. Biomass is a promising sustainable resource to meet this challenge. Woody biomass is well suited to Michigan given our abundant forestland. It can help wean us from our dependence on Middle Eastern fossil fuels, stimulate economies, grow jobs, and revitalize rural communities.

### **Approach Two: Developing Our Communities**

Supporters of Approach 2 agree that much is needed to reinvent our energy system and renewable sources must be a part of that future. Woody biomass, however, is not a perfect solution because it is bulky to move and store. This obstacle can be harnessed to ensure we link biomass development to rural revitalization. In order for biomass to support rural community development we must prioritize ownership, infrastructure, and scale issues that are appropriate to the community. Failure to prioritize the geographical context in which the biomass is located through policies and programs will result in a loss of benefits to rural people and places.

### **Approach Three: Unrealistic Sources**

Supporters of the final approach argue that woody biomass is the wrong path to meet our state's energy needs. Biomass is destructive to the forests, clearing thousands of acres of forestland that is part of our public domain, for private use. Biomass is also devastating for public health, creating challenges for residents in the surrounding communities who will be exposed to air pollutants. In short, insufficient attention is being paid to the complexity of how these new agri-energy systems will interact with and impact both humans and the environment.

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<sup>1</sup> Each of these three approaches were developed from data derived from one-on-one interviews, community forums, and an analysis of existing literature on the topic of woody biomass development.

*How can we best establish supply chains for woody biomass while adjusting public perception about harvesting wood for energy?*

### **What Should Be Done?**

*Invest in biomass production and conversion from forestland and short rotation crops.*

*Create supply chains to facilitate biomass movement from producers to consumers.*

*Invest in the R&D to deliver new technologies to harvest, process, and transport biomass that are economical and suitable for Michigan forests.*

*Provide training opportunities to prepare a new generation of workers for jobs in the biomass industry.*

*Governments should strengthen policies that will reward investment in biomass development.*

### **On the Other Hand ...**

*Extracting biomass from the forest is environmentally destructive. It disrupts delicate eco-systems and, distracts us from focusing on more economically beneficial uses of our forests.*

*Burning biomass is dirty. Building new biomass incinerators will emit toxic chemicals into our air, pollute waterways, and make us sick.*

*Fallow land may be fallow for cultural reasons rather than economic. Land owners may have no interest in raising energy crops.*

*Weather and seasonality make the production of biomass unreliable, as do supply limitations.*

*Large scale bio-refineries owned by out-side interests will not benefit local communities and people.*

*Such developments will mean importing a new workforce.*

## **Approach 1 Multiple Benefits from Woody Biomass**

Proponents of Approach 1 argue that woody biomass will play a critical role in our future as a renewable energy source. They contend that the challenges that lie ahead are not ecological but are more matters of perception and politics. In other words, we can responsibly develop a woody biomass industry, but do we have the will to do so?

A flurry of global development challenges have brought huge changes to the world's energy needs and supply. Growing longevity in industrialized nations and mounting population growth suggests that the world will need more and more energy to meet our global needs. As the human population climbs to 9 billion with many of those in the developing world desiring to achieve a standard of living that is energy-intensive, new fuel sources are vital. In the U.S. alone, we use more than 140 billion gallons of gasoline and almost 40 billion gallons of diesel fuel annually.

Proponents of this approach argue that excessive dependence on fossil fuels, and by extension, Middle Eastern suppliers, makes us vulnerable to potential supply disruption that could come about from market changes. In 2009, the U.S. imported 52% of our crude oil needs. The development of woody biomass can function as a domestic source of energy to protect us from such external threats. Producing our own biomass would also compete with the global price of crude oil lowering the price of imported oil. Here in Michigan, support for biomass is articulated with spatial dimensions. Northern Michigan community residents increasingly express a desire to supply their own power by using local renewable energy as opposed to southern Michigan and regional coal-fired electricity. For all of these reasons, we must diversify our energy sources and reduce our fossil fuel use.

### **Woody Biomass is 'Green'**

Investment and development of woody biomass can wean us from our greedy appetite for oil, making our nation more

independent and secure, but it can also protect the environment. Burning wood is a green alternative to fossil fuels because it is ‘carbon neutral.’ Unlike coal, whose carbon is sequestered within the earth and released only when dug up and burned, the carbon dioxide in trees is taken from the air and released back whether the tree dies naturally or is burned for energy. This process can reduce carbon emissions, slow global warming, and enhance ecosystems.

Advocates of Approach 1 say that over time, using wood for energy can lead to lower atmospheric greenhouse gas levels. A recent study from the Manomet Center for Conservation Sciences showed that while emissions from burning wood are initially higher than from fossil fuels, regrowing forests sequesters carbon, a process that eventually can yield greenhouse gas levels lower than would have resulted from continued burning of fossil fuels.

#### Top Sources of U.S Oil Imports

Country	Total US imports Thousand barrels per day
Canada	1,876
Saudi Arabia	1,060
Mexico	1,152
Nigeria	642
Venezuela	1,009
Iraq	477
Angola	534
Russia	266
Colombia	256
Algeria	242

Source: Energy Information Administration, 2009  
([www.eia.doe.gov/](http://www.eia.doe.gov/))

With almost 20 million acres of renewable forestland in our backyard we can lead the nation in creating biomass supply chains. Michigan’s timberland acreage is the fifth largest in the U.S, providing ample natural resources to fuel our biomass needs. They are also largely located in the northern two-thirds of the state, in regions in dire need of economic stimulus.

#### Michigan Forests

Much of the Michigan forest is privately owned (65%), creating the opportunity for expanded entrepreneurship. Non-industrial private owners and farmers control 57% of the total timberland acreage. The forest industry controls about 8% of the forest. Public interests control the remaining 35% with the state of Michigan controlling 21% and 14% being federally owned. State Forester Cara Bouchard says that the state removes only about one-third of its growth each year, leaving plenty more to be harvested without harming the forest.

Using our state’s public and private forestland holds a number of ecological benefits such as facilitating the removal of invasive woody species, improving the health of remaining trees and improving overall forest health. Using forestland for biomass can also decrease unnaturally severe wildfires within forests, reduce air pollution caused by wildfires, and reduce fire related erosion.

#### New Markets

Investment in woody biomass can also increase economic opportunities for rural communities. For timber-dependent-communities, market fluctuations can present significant challenges to rural labor markets. Many Michigan rural communities would benefit from additional avenues in which to market timber. Utilizing forest biomass and siting processing facilities in rural communities will create critical economic gains and enhance local economic development. The development of woody biomass can create new streams of revenue for

farmers and rural communities as they put fallow cropland back into production with short rotation bioenergy crops such as willow, poplars, or switchgrass.

Due to the complex infrastructure needed to collect, store, and transport biomass, most development will occur in rural, and often remote, areas most in need of economic diversification. Not only will farmers benefit from the new markets, investors will be needed to develop the upstream segments of the supply chain near the source. Economic value can also be realized when energy costs are decreased by substituting woody biomass for other fuels.

Therefore, barriers to creating a biomass industry are more social and political than biological or ecological. To meet the growing worldwide demand for energy and to address environmental and rural development needs at home, we must develop a place for biomass in our vision for a renewable future.



*How shall we manage forest and non-forest resources to provide a more even supply of service and products to people? Wood, paper, energy, recreation, biodiversity, conservation – all have to be considered.*

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### **What Should Be Done?**

*Use local resources in lieu of imported fossil fuels*

*Policies and incentives need to be established that equally support rural development objectives in addition to environmental goals.*

*Sustainable forest management guidelines are being developed. We should apply the same diligence to protect community economic development.*

*Create short supply chains to keep producer and consumers linked.*

*Invest in the R&D to deliver new technologies to harvest, process, and transport biomass that are scale sensitive.*

*Encourage local entrepreneurship rather than massive workforces.*

*Develop woody supply assessment tools and certification systems to ensure sustainable forest management.*

### **On the Other Hand ...**

*Local communities should make better use of their local resources than choosing incinerators.*

*Small refineries are not practical as they require high levels of capital investment and can't supply energy needs.*

*Siting biomass plants locally is no guarantee wealth will be shared with the community.*

*Local ownership and control cannot ensure that sustainable standards of production and harvesting will be upheld.*

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## **Approach 2 Developing Our Communities**

Supporters of Approach 2 agree that much is needed to reinvent our energy system and renewable sources must be a part of that future. Woody biomass, however, is not a perfect solution. Advocates of Approach 1 assume that we have complete knowledge about developing a biomass system. We do not. Many unknown challenges lie ahead. For example, woody biomass is bulky to move and store. One challenge is to overcome this obstacle by ensuring we link biomass development to rural revitalization. Biomass can be beneficial if sourced and utilized locally. In order for biomass to support rural community development we must prioritize ownership, infrastructure, and scale issues that are appropriate to the community. Failure to prioritize the geographical context in which the biomass is located through policies and programs will result in a loss of benefits to rural people and places.

One example of the challenge that lies ahead can be seen in the costly development of an efficient and modern infrastructure capable of making the most of wood's stored energy. As compared with coal, wood is far less energy dense, much bulkier and therefore more expensive to transport and store, limiting its utilization to proximities usually within 50-75 miles. This reality does not have to be an obstacle; it can be an asset for local rural development. If woody biomass is difficult to move around and store for long periods of time, then it is best if embedded in the places in which it resides. Not only will that solve infrastructure challenges, it will create economic and civic benefits for rural communities. The new adage, "all biomass is local", speaks to the need by supporters of Approach 2 to consider ownership, structure and scale issues that are appropriate to the community. Otherwise benefits may be lost if policies and programs do not prioritize the geographical and social context in which the biomass is located.

## Ownership Matters

Some of our energy needs can be met by woody biomass if we prioritize rural development needs. This will require linking biomass development to policies, technologies, and infrastructures designed for rural revitalization. Local, cooperative or municipal ownership of developments has a positive impact on the long-term well-being of local markets and the civic life of communities. The benefits from biomass will not automatically accrue to local communities simply because entrepreneurs begin to harvest timber or when farmers begin to produce perennial crops. They must be locally owned and operated to ensure that the multiple benefits from biomass continue to circulate in rural communities rather than leave the area.

Large scale production systems owned and operated by investors who have no stake in the well-being of the community will make decisions based solely on production, yield, and profit rather than considering the host of complex issues communities are faced with, such as environmental responsibility and community well-being. Firms that are embedded in local supply chains and institutions can be held accountable for decisions that impact community residents, such as the jobs they do or do not create, the infrastructure changes they ask the community to pay for, and the environmental standards they wish to achieve. In being connected to their neighbors by a shared sense of place, local control ensures the social and economic needs of the place are fore-grounded. Firms embedded in national and international networks answer to investors who are removed from the community and have different interests. This practice will limit the rural development potential of woody biomass. From farming communities in California controlled by large scale agribusiness, to the coal-mining towns of Appalachia, the negative impact of non-local ownership on communities is well documented.



To prevent this from occurring in Michigan communities, we need community mitigation plans around biomass. Such mitigation plans can help monitor the effects of biomass production and processing and even improve the quality of life within the community. They can also empower the residents of the community to be creative problem solvers and establish an economic, social and political environment that will protect and enhance local livelihoods.

## Cropping Systems

A second concern to ensure that biomass development is linked to rural revitalization is to consider the trade-offs that will come as a result of the cultivation of short rotation woody biomass crops. If farmers take fallow land and place it in switchgrass or willow production it is unknown how these practices will impact local labor markets. Will they take laborers from other areas of the economy and create hardships for other producers? Will the rising prices associated with these perennial crops impact economic livelihoods of other sectors of the economy, such as paper and pulp producers? The production of \$6 per bushel for corn ethanol raised the price of animal feed creating severe hardships for livestock producers. It is also unknown how much fallow land is available for producing fuel crops.

Economists may have a handle on available acreage but we know nothing about land owners' willingness to return the land to cultivation. The reasons land owners leave their property fallow are numerous and complex and extend beyond mere economic returns.

Supporters of Approach 2 also say that geographical scale and location of the firm and its supply chain can also have significant impacts on the environment. Concerns for production, yield and profitability can put pressure on decision makers to downplay the needs of the environment. Aggressive harvesting of timber to maximize profit can result in soil erosion, reduce bio-diversity, lead to deforestation and habitat loss. Biomass can be produced and harvested in environmentally responsible ways but measures must be taken to ensure that these practices are enforced. The destruction of the natural resource base will be devastating to rural community well-being. The primary focus of any energy development initiative must be sensitive to scale and ownership issues so that the needs of communities and sustainability is not sacrificed to values of productivity and profit.

*Are biomass guidelines sufficient to protect our natural resources? Who will protect our communities and health?*

### **What Should Be Done?**

*Do nothing... stop investing in woody biomass production and conversion immediately!*

*Withdraw public financial support for investment in woody biomass development.*

*Retract any support for biomass development from the U.S. Farm Bill and Energy Independence and Security Acts.*

*Policy making in regards to renewable energy should follow recent scientific scholarship that shows biomass is not sustainable.*

*Create incentives for industry to develop truly clean and green energy – solar and wind and other nonpolluting sources of energy.*

*Use short term renewable forms of biomass rather than forests.*

### **On the Other Hand ...**

*Woody biomass IS carbon neutral, and therefore sustainable.*

*Woody biomass is one of the best solutions to our energy needs. It may not be perfect, but we must make changes immediately. It can buy us time as we concurrently engage in the science to improve biomass so one day we do achieve truly renewable energy.*

*Sustainable production practices can assure that human health is not at risk.*

## **Approach 3 Unrealistic Sources**

Supporters of the final approach argue that woody biomass is the wrong path. They have serious concerns that focus on three primary areas: the environment, human health, and economic development. They agree that we must confront our critical energy challenges that lie ahead, but where others see opportunity in woody biomass, they see peril.

They are concerned that woody biomass is not as 'renewable' as it is touted. Biomass is destructive to the forests which we are asking to supply our growing energy demands. The increasing appetite for timber will put pressure on loggers to aggressively cut prime forestland. Biomass material is expected to come from private land and state and federal forests. State and federal forests are a public good, and should not be given to investors looking to exploit it for short term profit.

The forest is not merely a resource for humans to exploit but it is a delicate ecological system that nurtures many living organisms. A number of organisms depend on the insects, fungi and small mammals that make their home on the forest floor. Disruption to this system will wreak havoc on this ecological balance in ways we cannot predict. For example, some say that not only will loggers take the 'slash' or residual matter that is now left in the forest after logging, but once new biomass facilities are open for business, entire trees will be burnt for energy as well. This residual material is vital to maintaining the ecological balance of the forest. It provides rich nutrients to the environment that support the biodiversity of the forest. This environment is responsible for helping to regenerate this natural resource.

### **Woody Biomass is Not 'Green'**

Burning biomass also is not 'carbon neutral', according to recent scientific studies. Like coal, burning biomass releases more carbon into the air, further hampering our ability to address global climate change. Other practices and technologies, such as wind, solar and energy efficiency should first be implemented.

## **Sourcing Biomass**

In many cases, advocates of woody biomass claim that plants will draw from a 50-75 mile radius to supply their needs. Proponents of this approach counter that there is insufficient biomass material to serve the appetite for wood and little coordination between the multiple proposed biomass projects in the region. In the near future wood shortages would be commonplace, putting pressure on other woods needs, such as paper mills and people who heat their homes with wood. Overall, biomass energy development creates incentives for cutting and burning the whole, standing trees rather than merely collecting the residual matter, as there is not near enough mill waste to economically supply new biomass plants and bioenergy crops are not yet available.

The forest also provides recreational opportunities for citizens who enjoy hunting, hiking, horseback riding, snowmobiling and other activities that enhance tourism development. More competition for wood means less availability for the forest for recreation and relaxation. These are serious threats to a state whose second largest economic sector is tourism. Smelling smokestacks and sharing the road with logging trucks are typically not high on tourists' agendas.

Producing fuel crops such as switchgrass or willow is also unsustainable. It continues down the road to monoculture – encouraging farmers to produce the highest value crops. Some farmers will no doubt put fallow land that serves vital ecological functions back into production.

## **Risks to Health**

Proponents of this approach also claim that woody biomass presents an unacceptable health risk. Anything that is burned does not truly qualify as renewable energy. Incineration pollutes air and waterways and sickens local residents. Technological fixes such as 'scrubbers' (i.e., filters) placed on smokestacks do not completely remove all pollution from the air. What is removed, however, ends up in landfills and eventually our ground and waterways, and our bodies. Support for this position comes from the American Lung Association and others. Children with asthma are particularly susceptible to respiratory problems due to air particulates.

The use of valuable land for fuel crops rather than food is also a challenge to our community's food security. Land should be used to feed people, not automobiles. Using land for fuel crops may lead to higher food prices and even food insecurity in some communities. Land used as fuel is unsustainable. We must prioritize the use of this natural resource for food.

## **No New Jobs**

Proponents of Approach 3 also believe that jobs will not be created that can aid to the economic development of communities. In most cases less than 30 jobs are 'created' with the opening of a woody biomass facility. New management and technical positions will likely be filled by persons outside the community, leaving only minimal employment opportunities for local residents. Creation of new jobs supplying wood to the new facilities is not likely. Instead, existing procurement businesses and employees will simply increase their workload. Overall, burning wood provides the least economic return on an investment as compared with other possible uses. By focusing state and therefore taxpayer resources on development of a new

biomass industry, promotion of other forest industries that could potentially supply more jobs and better returns are ignored.

Communities are concerned that any benefits will go to those who live outside their borders and who are not faced with the day to day challenges of 'living with biomass'. Proponents of this approach often claim that the daily challenges will be placed on their backs. For example, truck traffic associated with hauling logs to the incinerator and shipping out the fuel or ash will put wear and tear on the rural community infrastructure. More traffic in small communities requires more roadways, traffic lights, and is a drain on sewage and electrical systems. The burden for this up-keep falls on the shoulders of local citizens through increased taxation, not corporations located in other states.



In short, insufficient attention is being paid to the complexity of how these new agri-energy proposals will interact with and impact both humans and the environment, the consequences which will be to all our peril and to those of future generations. Climate and energy decision-making (including policy) that fails to account for the detrimental effects of biomass have no place in America's energy future. We owe it to ourselves to be more creative and cautious as we move forward.

## Glossary of Terms

**Bioeconomy:** Currently our economy is heavily reliant on nonrenewable sources of energy such as coal. The 'bioeconomy' is the push to supply energy and other products from renewable, organic materials such as plants and agricultural waste.

**Renewable Energy:** Electricity produced using renewable resources.

**Renewable Energy Resource:** As defined by the Michigan Law, renewable resources replenish over the course of human, not geological time, and come from the sun, wind, water or the earth's natural heat.

**Bioenergy:** Energy, such as heat, liquid fuel or electricity, which has been produced using renewable resources.

**Biofuels:** Fuels, such as ethanol or wood pellets, made from renewable sources derived from forests and agricultural products.

**Biomass:** Organic matter not derived from fossil fuels, such as agricultural residues, municipal wastes and wood, which can be used for making heat, electricity or biofuel.

**Carbon neutral:** The balanced give and take of carbon dioxide from the earth's atmosphere.

**Cellulosic ethanol:** Liquid fuel derived from cellulose, the carbohydrate in plants which gives stems, leaves and cell walls their rigidity.

**Ethanol:** A renewable liquid fuel fermented from plants such as corn and used to supplement fossil fuel derived petroleum.

**Greenhouse Gas:** Gases, such as Carbon Dioxide and Methane that trap the sun's heat in the earth's atmosphere.

**Sequestered:** In regards to greenhouse gasses, sequestered gasses are kept separate from earth's atmosphere, either underground or inside living organisms.

**Woody biomass:** Biomass derived from forests such as low economic value standing whole trees, logging residue, mill waste and fast growing perennial grasses and trees.

## Questionnaire

Now that you have had the chance to participate in a public conversation on this issue with others in your community, we would like to know what you are thinking.

1. Are you thinking differently about this issue now that you have participated in this conversation than you were before the conversation?  
 YES     NO    if yes, explain.
  
2. In this public conversation, did you talk about aspects of the issue you had not considered before?  
 YES     NO
  
3. Personally, what could you do to help address this issue?
  
4. What could be done in your community to address energy challenges?
  
5. Are there any policies that we need to enact in Michigan to help plan for a sustainable energy future? If so, explain.
  
6. Are you male or female?  
 MALE     FEMALE
  
7. How old are you?  
 17 or younger                       46-64  
 18-30                                       65 or older  
 31-45
  
8. Are you:  
 African American                       Asian American  
 Native American                       White  
 Other
  
9. Where do you live:  
 Rural  
 Small Town (<9,999 population)  
 Medium Town (10,000 – 49,999)  
 Large City (> 50,000)  
 Suburban

Please submit this form to one of the public forum leaders or email to [wrightwy@anr.msu.edu](mailto:wrightwy@anr.msu.edu).

## More Information:

For more information on biomass and renewable energy, please visit these sites:

Biofuels as Central to Rural Community Development

[http://www.carseyinstitute.unh.edu/publications/PB\\_biofuels.pdf](http://www.carseyinstitute.unh.edu/publications/PB_biofuels.pdf)

Global renewable energy news and information: <http://www.renewableenergyworld.com>

National Renewable Energy Laboratory biomass resource page:

[http://www.nrel.gov/learning/re\\_biomass.html](http://www.nrel.gov/learning/re_biomass.html)

Michigan Public Service Commission, regulating body for Michigan's utilities:

<http://www.michigan.gov/mpsc>

Michigan State University's Forest Biomass Innovation Center and Fact Sheets of Forestry and Woody Biomass for Michigan: <http://www.maes.msu.edu/fbic/>

Michigan State University's Bioeconomy resource page:

<http://www.bioeconomy.msu.edu/default.aspx>

Michigan Land Use Institute, news and journalism on Michigan's energy and environment issues: <http://www.mlui.org/landwater/index.asp>

State of Michigan's Biomass Energy Program: [www.michigan.gov/biomass](http://www.michigan.gov/biomass)

U.S. Department of Energy's Biomass Program:

<http://www1.eere.energy.gov/biomass/index.html>

U.S. Forest Service forest biomass resource page:

<http://www.nrs.fs.fed.us/niacs/tools/bioenergyworkshop/>