JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF AGRICULTURE
LANSING

MITCH IRWIN
DIRECTOR

June 21, 2007

Senator Michael Bishop
Senator Mark Schauer
Speaker Andy Dillon
Representative Craig DeRoche
Senator Gerald Van Woerkom
Representative Jeff Mayes
Senator Bruce Patterson
Representative Frank Accavitti, Jr.

Dear Honorable Legislators:

As you know, the Renewable Fuels Commission was created through Public Act 272 of 2006 for the purpose of identifying strategies that the governor and legislature may implement to accelerate development of Michigan's alternative fuel industry.

The Commission, comprised of 27 individuals with broad interests and expertise, met extensively over the past several months to fulfill their charge. This included a thorough review of the obstacles and opportunities in the production, distribution and use of renewable fuels. As a result, I am pleased to present the attached "Initial Report of the Renewable Fuels Commission – June 2007."

This comprehensive document includes 42 recommendations for stimulating growth in the biofuels sector, which include:

- Incentives for developers, distributors and consumers of renewable fuels and vehicles;
- Exploration and/or development of new funding sources;
- Changes in state law to remove barriers to selling biofuels; and
- Consolidation of state government renewable fuels promotion and economic development.

On behalf of the Commission, thank you for providing leadership and inspiration for this very important mission. We look forward to your review and implementation of these strategies.

Sincerely,

Mitch Irwin, Chair
Renewable Fuels Commission

Attachment

cc: Senate Agriculture Committee
House Agriculture Committee
Senate Energy Policy and Public Utilities Committee
House Energy and Technology Committee

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Initial Report of the Michigan Renewable Fuels Commission

June 2007

Prepared for
Governor Jennifer Granholm
and the Michigan Legislature

Submitted by
The Michigan Renewable Fuels Commission

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COMMISSION SUPPORT

Public Sector Consultants; Michigan Department of Agriculture

The Michigan Department of Agriculture contracted with Public Sector Consultants (PSC) to provide project support services for the Michigan Renewable Fuels Commission. PSC is a contributing author in addition to designing and updating the commission's website *(www.renewablefuelscommission.org);* preparing surveys; conducting research; facilitating commission and work group meetings; investigating strategies; and assisting in producing the Initial Report of the Michigan Renewable Fuels Commission.

FINANCIAL SUPPORT

While the Michigan Department of Agriculture provided principal financial support for this process, we thank the following organizations for sponsoring meals and refreshments and for providing facilities for the commission and work group meetings.

- Corn Marketing Program of Michigan
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- DTE Energy
- Ford Motor Company
- General Motors Corporation
- Lansing Center
- Michigan Agri-Business Association
- Michigan Soybean Promotion Committee
- Michigan Senate (Office of the Secretary)
- Michigan State University James B. Henry Center for Executive Development
- NextEnergy
- Plum Creek Timberlands
- Public Sector Consultants
- Toyota Technical Center

In addition, we thank the Michigan Auto Dealers Association and Kurt Berryman for arranging a preview of the 2007 North American International Auto Show in Detroit and Northwest Airlines for the use of their suite.

Executive Summary

In July 2006, Michigan Governor Jennifer Granholm approved bipartisan legislation to encourage the production and use of biodiesel and ethanol in the state, increase the viability of Michigan's agriculture industry, and reduce the nation's dependence on foreign oil. The legislation also established a renewable fuels commission to be chaired by the Michigan Department of Agriculture (MDA) and comprised of members representing diverse interests. The commission was charged with investigating and recommending strategies that the governor and legislature may implement to promote the use, development, and production of alternative fuels.

KEY RECOMMENDATIONS

The commission made 42 important recommendations. Key recommendations are summarized below.

- Establish an incentive package of at least $200 million for developers of early-stage technology projects and processing centers using $50 million from the 21st Century Jobs Fund over two years and $150 million from other sources over the following three years.
- Explore and/or develop new funding mechanisms, including federal grants (such as the Department of Energy grant to support the development of small-scale biorefineries in Michigan) as well as non-earmarked revenue generated from state-owned oil, gas, and forest reserves.
- Reserve a minimum of six tax-free renewable energy Renaissance Zones for new facilities that utilize cellulosic materials for renewable fuel production.
- Change state laws to enable motor fuel franchise dealers or distributors to obtain biofuels from a supplier other than a franchise distributor and provide for penalties if a distributor discourages a dealer from buying/selling biofuels.
- Establish a "Green Retailers" tax incentive program to reward retail and wholesale outlets that reach benchmarks in the sale of biofuels. This will support infrastructure development needs for E85 and B20 and accelerate the goal to use a minimum of 10 percent alternative fuels in the transportation sector by 2012.
- Consolidate within a single agency those renewable fuels-related promotion and economic development efforts currently housed in several state departments.
- Establish Regional Biomass Processing Centers to facilitate commercialization of various feedstocks for renewable energy production. These hubs will be created with prospective biomass customers in mind and would be funded with state, local, and federal resources, as well as matching funds from a partnering research university.
- Identify, publish, and market an inventory of prime sites for co-location of new renewable fuel plants with existing facilities, such as pulp mills, industrial facilities, power plants, and food processing plants.
- Initiate a strategy to enact a low-carbon emission transportation fuels program in Michigan that will result in achieving 25 percent use of renewable fuels by 2025 as part of the overall carbon reduction strategy for the state.

- Encourage the purchase of renewable fuel vehicles (RFVs) through sales tax reductions and/or decreasing the annual vehicle registration fee for an RFV.

Chapter 1: Introduction

BACKGROUND ON THE MICHIGAN RENEWABLE FUELS COMMISSION

Michigan's leaders decided in 2006 that the state needed to make a focused effort to encourage the production and use of biodiesel and ethanol products in Michigan, increase the viability of Michigan's agriculture industry, and reduce the nation's dependence on foreign oil. Michigan Governor Jennifer Granholm approved on July 7, 2006, a bipartisan package of bills to encourage the use of renewable fuels within the state. The legislation in the seven-bill package included a law (P.A. 272 of 2006) establishing a renewable fuels commission within the state's Department of Agriculture (MDA) (see Appendix B for statute).

Governor Granholm appointed 27 members to the commission representing diverse interests; current MDA director Mitch Irwin was appointed to chair the commission. The commission members were chosen for their personal and professional interest and expertise in the broad area of renewable fuels. Members represent a wide array of interests—including the agricultural industry, fuel blenders, petroleum sellers and suppliers, biodiesel and ethanol producers, environmental interests, research institutions and universities, and automobile manufacturers. Representatives from the following state agencies were also included: the Department of Environmental Quality (MDEQ), the Department of Labor and Economic Growth (Michigan Public Service Commission), the Michigan Economic Development Corporation (MEDC), and the Department of Management and Budget (Fleet Operations). For a full list of commission members, see Appendix C.

Commission Charge

Through Public Act 272 of 2006 that created the Michigan Renewable Fuels Commission, the legislature charged the newly formed commission with the following tasks:

- Investigating and recommending strategies that the governor and the legislature may implement to promote the use of alternative fuels and encourage the use of vehicles that utilize alternative fuels
- Identifying mechanisms that promote research into alternative fuels
- Identifying mechanisms that promote effective communication and coordination of efforts between the state and local governments, private industry, and institutions of higher education concerning the research into, and investigation and promotion of alternative fuels
- Identifying and reviewing state regulations that may hinder the research into and the use and development of alternative fuels and vehicles that are able to utilize them and recommending changes to the governor
- Issuing a written report, including information gathered and recommendations, to the governor and the legislature by July 7, 2007, and annual (or more frequent if the commission deems advisable) follow-up reports thereafter

In her welcoming address to the commission at their first meeting on November 30, 2006, Governor Granholm said that Michigan is poised to do wonderful things, including becoming a leader in the research, development, and production of renewable fuels; however, the state needs a road map to get there. She asked them to figure out how Michigan can become known as a national leader—a state that has always taken advantage of its natural, agricultural, and other unique assets. No other state is positioned as Michigan is now, with its unique combination of the auto industry, top research universities, diverse agricultural industry, and a strong manufacturing base.

In her 2007 State of the State address, Governor Jennifer Granholm outlined a plan to increase Michigan's participation in the alternative energy sector. She announced that the state will begin "an aggressive, three-year effort to attract even more alternative energy companies to Michigan through more than $100 million in combined public-private investments." She also set as a goal that by 2008, the state will have 1,000 ethanol and biodiesel pumps at gas stations across the state.

> In the 20th century, we were the state that put the nation on wheels. In the 21st century, Michigan can be the state that breaks our nation's dependence on foreign oil! (Governor Granholm, February 6, 2007, State of the State Address)

The commission, through the leadership of Director Mitch Irwin and staff support of Public Sector Consultants and the Michigan Department of Agriculture, has adhered to the charge. This report is the result of their work over the eight-month period from November 2006 to June 2007.

Purpose of this Report

The purpose of this report is to respond specifically to the commission's charge established through P.A. 272 of 2006. The report documents the current state activity as it is related to renewable fuels and the issues and challenges to expanding and encouraging growth in this industry in Michigan. This report also presents a vision for renewable fuels in Michigan and public policy recommendations to support this vision.

Process of Creating this Report

The Michigan Renewable Fuels Commission held a total of five formal meetings and three additional work group meetings over an eight-month period, from November 2006 through June 2007. All commission meetings were open to the public. In addition to providing an opportunity at each meeting for the public to provide input, the commission also accepted written comments through the online comment form, mail, fax, and e-mail. Since October 2006, five different people have spoken during the public comment period at the end of the commission meetings and 24 online and 13 written and e-mail comments were received. The public comments were compiled and summarized by Public Sector Consultants. Three reports summarizing the public input received were prepared and submitted to the commission (Appendix D).

November 2006

During the eight months the commission met, it followed a three-phase process: grounding, visioning, and recommendations. The commission's first meeting on

November 30, 2006, marked the beginning of the *grounding* phase. Preceding the meeting, a survey of commission members was conducted to gather their responses on the following:

1. What needs to be done in Michigan to promote the development and use of alternative fuels?
2. What needs to be done in Michigan to promote the use of vehicles that utilize alternative fuels?
3. What are the current barriers (regulatory or otherwise) to renewable fuel innovation in Michigan?
4. What topics related to alternative fuels and best practices would you like more information about?
5. What places (states, companies, regions, etc.) are models for alternative fuel innovation and/or who are experts in the field?

Their responses helped guide the work of the commission. PSC presented the results of this survey, and commissioners also heard from Representative Jeff Mayes on the legislature's intent for creating the commission, Governor Granholm, and Suzanne Hunt, Worldwatch Institute Biofuels Project Manager. After discussion of the background material and input from commission members, four work groups were established to develop recommendations in the following areas:

- Feedstocks—focusing on promotion of Michigan's agricultural and forestry industry; agricultural and forestry products; planting and harvesting; and research on new feedstocks
- Production of Fuel Supply—focusing on processing feedstocks; incentives and funding for new processing and fuel production methods and technology
- Distribution and Infrastructure—examining the number and distribution of pumps, pipelines, and transportation routes and encouraging their expansion; fuel retail; developing renewable fuel standards; and discussing exclusivity contracts
- Public Education and Marketing—focusing on general public education; target audiences such as fleet operators and mechanics; consumer incentives; and environmental education

Commissioners were assigned to one work group only and ranked their order of preference. As each work group involved only a sample of the full commission, staff ensured that the groups were balanced and represented diverse interests and expertise, and did their best to also accommodate commissioners' interests. A list of work group representatives is available in Appendix E.

January 2007

At the January 11, 2007, meeting of the commission, members continued to receive new background information on state activities related to renewable fuels and renewable energy and the approach and perspective of each of the automakers serving on the commission. Members heard presentations from Commissioner J. Peter Lark, Chairman of the Public Service Commission, on the forthcoming 21st Century Energy Plan, and

from Jim Croce of NextEnergy on the potential future of renewable fuels in Michigan. Representatives from Ford, General Motors, DaimlerChrysler, and Toyota explained their companies' approach and commitment to the research, development, production, and marketing of alternative fuel vehicles. The commission ended the meeting by beginning to discuss their *vision* for renewable fuels in Michigan. This draft vision was subsequently revisited in February and the final version can be found in Chapter 3 of this report.

February-March 2007

The meetings on February 26, 2007, and March 28, 2007, were similar in structure, providing brief background presentations from commission members and university researchers on the forestry industry and woody biomass as a feedstock, on biodiesel, and on cellulosic ethanol production. The majority of these two meetings were devoted to discussing *recommendations* within the four work groups. At the March meeting, members from the Feedstocks and Production work groups came together to discuss the interdependency of their recommendations. Due to the number of overlapping issues these work groups were discussing and the need for a consistent strategy, the two work groups decided they should be combined and prepare only one comprehensive set of recommendations for the commission's final report.

April-May 2007

Rather than hold a full commission meeting for the month of April, work groups decided to meet independently to continue to develop public policy recommendations and an action strategy that was consistent with the commission's vision and goals for Michigan. At the May 23, 2007, meeting, the full commission reviewed the draft recommendations of the three work groups and offered amendments. The group used a consensus-based approach and voted on only two recommendations where there was not unanimity among the commissioners.

ORGANIZATION OF THE REPORT AND STRUCTURE OF THE RECOMMENDATIONS

The chapters presenting the vision and recommendations (Chapters 3–6) were developed and formally adopted by the commission. The remainder of the report was prepared by staff, and while reviewed and commented upon by commission members, was not formally approved by the commission.

The report is organized with background information first and recommendations second. Chapter 2 reports on the current activity in Michigan related to renewable fuels including available feedstocks, current production capacity and distribution infrastructure, and state incentive programs. It also provides research on the issues and challenges of expanding the renewable fuel sector of the state's economy. Chapter 3 details the commission's vision for renewable fuels in Michigan. Chapters Four 4–6 are organized by the work group issue areas: Feedstocks and Fuel Production; Distribution and Infrastructure; and Public Education and Marketing. The individual recommendations are not listed in any particular order. Where possible, the recommendations are specific as to the party responsible for implementation (state agency or legislature). Although the

recommendations are presented in separate categories, it is important to note that most of the recommendations are interrelated. A compendium of all the recommendations can be found in Appendix F.

PROMOTING SUSTAINABILITY

In this document, when reference is made to "sustainability" or "sustainable," it implies that systematic consideration is given to the balance among economic prosperity, environmental integrity, and social equity.

Finding the Balance among Other Issues (Economic, Environmental, Social)

While the potential for technological advancement offers the promise of more efficient processes in the future, many economic, societal, and environmental issues need to be addressed to move from technological possibility to innovation-driven success. (CCG 2006) As an alternative to petroleum, renewable transportation fuels offer the opportunity to decrease the emissions of greenhouse gases, while also supporting Michigan's agriculture and forestry industries. There are, however, many factors that the state must consider when implementing a renewable fuels strategy:

- Energy balance
- Greenhouse gases and other emissions
- Ecosystem health
- Food verse fuel
- Impacts on agriculture and rural development
- Plant and fuel distribution infrastructure
- Alternative fuel vehicle and engine technologies
- Technology transfer

For a comprehensive review of these issues, please refer to Worldwatch Institute's 2006 publication, *Biofuels for Transportation* (Worldwatch Institute 2006).

ISSUES TO ACKNOWLEDGE

Commissioners and members of the public consistently brought several important issues before the commission. Many of these issues have been addressed in this report, but some are being dealt with in other forums or could not receive adequate discussion and/or resolution at the completion of this process. The Governor's Office, Michigan Public Service Commission, NextEnergy, and Michigan's Departments of Agriculture, Environmental Quality, Labor and Economic Growth, and Natural Resources, in conjunction with representative stakeholder organizations and research institutions, should begin or continue to examine and develop recommendations related to the following issues:

Renewable Energy and Electricity

- Renewable portfolio standards (RPS)
- Geothermal energy

- Wind and solar power
- Net metering
- Cogeneration energy plants
- Other biomass products for home heating and energy production
- Methane digesters
- Gasification

Alternative Feedstocks, Bio-based Products, and Alternative Fuel Vehicles

- Utilization of solid waste materials for ethanol production or waste vegetable oil for biodiesel production
- Advanced battery technology and hybrid/electric vehicles
- Promotion of other bio-based products, in addition to transportation fuels

Environmental and Agricultural Issues

- Concentrated animal feeding operations (CAFO)
- Water and air quality issues
- Soil erosion and conservation efforts
- Water use (consumption)
- Impacts on food production
- Atmospheric emission constraints on energy plants based on coal/natural gas/oil

Chapter 2: Background Information on Renewable Transportation Fuels in Michigan

The information presented here is intended to provide a brief overview of renewable transportation fuels in Michigan, set the stage for the work of the commission, and provide a sampling of data and information. As a part of the commission's process, a website (*www.renewablefuelscommission.org*) was created that houses much reference and research material as well as links to other renewable fuel resources from a variety of perspectives. It is important to note that the charge of the commission, and thus the focus of this report, is on renewable fuels used for transportation *only*.

WHAT IS A RENEWABLE TRANSPORTATION FUEL?

There are many and varied definitions and uses of the term "renewable fuel." There are also several interchangeable terms including alternative fuels or biofuels. Renewable fuels conjure up many a theory, dialogue, and mental image depending on the context within which it is used. But to be clear and to start at the beginning, the Energy Information Administration (EIA) defines renewable energy resources as those resources that

> are naturally replenished in a relatively short period of time. They include biomass, hydropower, geothermal energy, wind energy, and solar energy. In 2004, about 6% of all energy consumed, and about 9% of total electricity production was from renewable energy sources. (DOE/EIA 2007)

The EIA goes on to explain simply that "alternative transportation fuels are fuels used for transportation other than gasoline or diesel. Some alternative transportation fuels, such as ethanol and biodiesel, are renewable while others, such as propane and natural gas, are non-renewable." (DOE/EIA 2007) For the purpose of providing a common definition from which to ground discussions, this will serve as the definition of renewable transportation fuel within this report.

The common use of the term "biofuel" refers to ethanol and biodiesel collectively. These types of biofuels are classified as biomass resources because they are made from animal, plant, and/or tree material. The type of material used to make the fuel is referred to as the feedstock or the raw material required for the industrial process that produces the renewable fuels.

HISTORY OF RENEWABLE TRANSPORTATION FUELS

While there has been a flurry of activity and discussion about renewable transportation fuels in recent years, biofuels have been used for several decades, often in specialized applications. (DOE/EIA 1994) The recent interest in biofuels is the result of many factors that have converged to produce a unique opportunity to capitalize on their many benefits.

But nearly all of these factors stem from our increasing and collective dependence on petroleum-based products. "Use of petroleum-based products has been a fundamental reality for much of the world's economic growth for the last century. In recent years, the

prospect that future global growth can be solely tied to the use of petroleum resources has become increasingly uncertain." (CCG 2006) The following factors are ripening conditions to explore the uses of biofuels:

- Relatively rapid ***increases in energy costs*** which have put pressure on economic growth and challenged consumer expectations (CCG 2006)
- The ***pace of economic growth in developing nations***, which has both contributed to high and volatile market prices for fossil fuel products and raised serious questions about the nature of future competition for those products (CCG 2006)
- The need for ***energy security***—"After each of the world oil crises (1973 and 1979), there was a flurry of activity to determine if a suitable domestic replacement for crude-based transportation fuels existed. After oil prices escalated sharply (but briefly) during the Persian Gulf conflict, energy security concerns resurfaced." (DOE/EIA 1994)
- The development of more efficient conversion ***technologies*** (Worldwatch Institute 2006)
- The introduction of strong new ***government policies*** (Worldwatch Institute 2006)
- A desire to find ***new markets for farmers and their products*** (Worldwatch Institute 2006)
- ***Environmental concerns*** including greenhouse gases and global climate change

All of these factors have heightened political awareness of the pressures facing the current reliance on petroleum-based products.

The world economy is in a state of transition as it wrestles with the technological opportunities and societal issues surrounding biotechnology along with the high cost of and dependence on petroleum-based products. The concern over these issues has presented a new opportunity—to create a bioeconomy focused on the production of goods and services derived from biomaterials as substitutes for petroleum-based goods and services. A number of key elements are necessary for a thriving bioeconomy and Michigan possesses many of the assets critical to successful bio-based industries. (CCG 2006)

CURRENT FEEDSTOCK, PRODUCTION, DISTRIBUTION, AND MARKETING/EDUCATION STATUS

Feedstock refers to the raw materials required for an industrial process, in this case the production of renewable fuels. In Michigan, the most important renewable fuel feedstock is organic material derived from agricultural activities. In the near future, improved technology may make it possible for other materials such as woody biomass to become useful feedstock for renewable fuel production.

The two primary renewable transportation fuels in use today are ethanol and biodiesel, both of which can be used in existing vehicles with varying degrees of success. Ethanol is currently blended with gasoline, while biodiesel is blended with petroleum-based diesel for use in conventional diesel-fueled vehicles. Ethanol accounts for about 90 percent of total biofuel production, with biodiesel making up the rest. (Worldwatch Institute 2006)

Ethanol Production

Currently, the only feedstock used for ethanol production in Michigan is grain *corn*. Starch is extracted from the corn and converted into sugars. The sugars are then fermented into ethanol and carbon dioxide. Corn is used because it has a high level of extractable starch compared to other feedstocks, using current, widely available technology. In 2006, Michigan's corn production totaled 288,120,000 bushels from 1,960,000 acres harvested. (NASS 2007) To put this into perspective, the Michigan Ethanol plant in Caro currently produces 40 million gallons of ethanol annually from 16 million bushels of corn. (Michigan Ethanol 2007) It also co-produces 144,000 tons of a livestock feed known as Dried Distillers Grain with Solubles (DDGS). As of May 2007, Michigan's ethanol plants are producing more than 200 million gallons of ethanol annually.

The first commercially operating ethanol plant in the state, Michigan Ethanol LLC (now POET Biorefining) in Caro, Michigan (Tuscola County), began operations in November 2002. The second commercial corn-to-ethanol plant (almost 58 million gallons per year [MGY] allowed) opened in Albion, Michigan, in early August 2006. This $70 million plant, Andersons Ethanol LLC (in Calhoun County), created 30 full-time jobs to produce ethanol, DDGS, and carbon dioxide (CO_2), which is another co-product of ethanol production. More jobs will be created when the carbon dioxide processing plant at the site is completed. The third commercial corn-to-ethanol plant in Michigan opened in Woodbury (Barry County) in mid-September 2006. US BioEnergy Woodbury, LLC, invested more than $56 million to create 37 full-time jobs, and produce approximately 53 million gallons of ethanol annually along with 160,000 tons of DDGS.

The fourth plant, the $85 million Great Lakes Ethanol, LLC (now Global Ethanol) in Riga (Lenawee County), began producing ethanol in March 2007 with the creation of 37 full-time jobs; 25 more full-time jobs were created with the addition of an $8.5 million CO_2 processing plant. There are plans to expand the Riga plant by late 2008 with the intent of increasing capacity by approximately 50 percent. Marysville Ethanol, LLC, in St. Clair County is investing $95 million in a 50 MGY plant currently under construction; it will create 35 full-time jobs once operational (expected fall 2007). The company has already begun the process of applying for permits for a proposed expansion to allow for an additional 60 MGY production capacity. Liberty Renewable Fuels, LLC, in Ithaca (Gratiot County) is under construction and will be the largest plant in the state, with a proposed production capacity of 121 MGY.

Additional interest in building more ethanol plants in Michigan and throughout the nation is evident, with several recent public announcements. Three plants in Corunna, Watervliet, and McBain have taken the first step in applying for or receiving permits and at least two additional plants have been proposed in Alma and Niles. Exhibit 1 is a summary, as of June 2007, of ethanol production, corn utilization, and ethanol plant status.

EXHIBIT 1
Michigan Ethanol Plant Production and Status

Plant	Production allowed (MGY)	Corn demand (million bushels)	Status
POET Biorefining-Caro	45	16	Producing
The Andersons-Albion	57	21	Producing
US Bio Energy-Woodbury	53	19	Producing
Global Ethanol-Riga	57	22	Producing
Liberty Renewable Fuels-Ithaca	121	48	Construction
Marysville Ethanol	55	20	Construction
Marysville Expansion	60	23	Applied/Received Permits
E85-Corunna	110	46	Applied/Received Permits
NextGen Energy Watervliet	58	22	Applied/Received Permits
NextGen Energy- McBain	50	19	Applied/Received Permits
M & M Energy-Alma	50	19	Proposed
Indeck Energy-Niles	100	38	Proposed
Total	**816**	**313**	

SOURCE: Michigan Department of Agriculture 2007.

The corn demand for the ethanol plants listed in Exhibit 1 exceeds Michigan's 2006 total corn production. In order to meet this potential demand in addition to other demands for grain corn (livestock feed, corn syrup, cereal, cooking oil, etc.), corn production in Michigan must increase and/or additional corn must be imported from other markets. For the 2007 growing season, Michigan producers intended to increase the corn planted by 15 percent (300,000 more acres) this spring, which could increase production by nearly 42 million bushels. In a 2005 Rapid Opportunity Assessment, researchers suggested that locating plants near large feedlot operations will minimize costs and maximize profits by providing a direct market for DDGS for livestock feed. New and expanded plants will be successful only if they are also integrated into a well-established supply chain. (Knudson and Peterson 2005)

Biodiesel Production

The primary feedstock used to make biodiesel is soybean oil. Michigan's soybean production in 2006 was 89,550,000 bushels from 1,990,000 acres harvested. (NASS 2007) Biodiesel production involves taking organically derived oil from *oilseeds*, *waste vegetable oil*, or *animal fats* and combining it with methanol to remove the glycerin. Biodiesel fuels can be used alone or in combination with petroleum-based diesel fuel in existing engines with little or no modification. Biodiesel can also be used as a cleaner-burning alternative for residential or commercial heating. Because biodiesel contains no sulfur, it may be a low-cost method of meeting new requirements in Environmental Protection Agency (EPA) rules on sulfur levels from diesel engines.

Michigan presently uses more than one billion gallons of diesel fuel annually, with biodiesel currently imported primarily from Illinois, Kentucky, Minnesota, and Ohio. The first commercial biodiesel plant in the state was dedicated in August 2006 in Gladstone, Michigan (Delta County), by Ag Solutions, Inc. It is dedicated to producing biodiesel

according to ASTM D6751, with at least 10 MGY capacity allowed. Another plant in Bangor, Michigan, Biodiesel, LLC (Van Buren County), has a production capacity of 10 MGY and was built in a Renaissance Zone. Two other commercial plants are presently under construction in Adrian and Milan and four more (in Reading, Belleville, Detroit, and Ithaca) are being proposed with a total production capacity of 40 MGY allowed. There is also a proposal to build an oil seed crushing facility in conjunction with the biodiesel plant in Reading.

According to the 2005 Rapid Opportunity Assessment, researchers claim that one concern with biodiesel is that supply is increasing faster than demand. More work needs to be done to increase demand and create a competitive cost comparison with traditional diesel. The trend of increasing soybean oil prices may also adversely affect the growing biodiesel industry so additional feedstocks will also need to be explored. To successfully compete in this market, biodiesel producers and processors will need to use the best available technology and take advantage of economies of scale. (Knudson and Peterson 2005)

Distribution and Infrastructure

If Michigan is to move forward aggressively to encourage the sale and use of biofuels in the state, Michigan feedstock growers and processors must do more than simply produce more fuel. In addition to production, biofuel products need to be readily available to consumers. If these products are not readily available, Michigan is in the precarious position of trying to develop a new bioeconomy and promote products that are based primarily in the near future.

It is clear from results regarding the purchase of renewable transportation fuels both in other states and here in Michigan that their pricing is very important to consumers. If given a choice between competitively priced products, many consumers will choose renewable fuels. This is borne out by the experience of Meijer, Inc. during the month of April 2007. During a two-week period, the company intentionally dropped the differential between gasoline and E85 by 20 cents per gallon. During that period, E85 sales jumped by 30 percent. G. E. Wacker, Inc. experienced a similar sales trend with B20 biodiesel. In February, when the price of diesel was a few cents less then B20, sales were split with B20 at 49.5 percent of the month's volume. In March, the price of both fuels was the same, and sales of B20 increased to 54 percent of the month's volume. In April, B20 was 4 cents less than diesel the entire month and B20 sales increased to 72.5 percent of the month's volume. Hence, finding ways to ensure the retailer maintains a positive margin is critical to the success of the sales of biofuels in the state.

Ethanol and Biodiesel Infrastructure

Michigan motorists used an average of 5 billion gallons of gasoline annually in the last few years; however, the use of ethanol-blended fuel is on the rise in the United States, and particularly in Michigan, where the annual use of such fuel surpassed the 151 million gallon mark in 2003. (MDA 2007) In Michigan, the mix is typically set at 10 percent ethanol to 90 percent unleaded gasoline (E10). There is also E85 ethanol, which consists of 85 percent ethanol and 15 percent gasoline. This fuel mixture will not burn well in

conventional cars, trucks, and other vehicles, but Flex Fuel Vehicles (FFVs) are specially designed to run well on this high-ratio mixture of ethanol to gas.

Biofuels cannot generally be distributed via the petroleum distribution pipeline infrastructure and instead are usually transported via either tanker trucks or railroad cars. Ethanol has a high affinity for water, which can cause it to separate from gasoline. Thus, colder climates may require dedicated ethanol pipelines, which are the cheapest means of fuel distribution. As of May 2007, there are more than 100 public refueling stations in Michigan: 50 E85 pumps and 38 biodiesel (B20 or higher), and 19 sites dispensing lower-level biodiesel blends (B10, B5, and B2) (see map in Appendix G). The State of Michigan also provides ethanol for state-owned vehicles at a facility south of Lansing. If Michigan is to be a strong participant in the biofuel revolution that is occurring across the country, it will need to be more aggressive in assuring the availability of biofuel pumps all across the state. To address this problem, Public Act 274 has assisted retailers in installing and converting equipment necessary to provide biofuels to the state's consumers. Under this act, a total of 17 stations in 14 counties have been given grant assistance to date.

More E85 pumps at Michigan service stations are expected to be installed as a greater supply of Michigan-produced ethanol fuel becomes available and a variety of economic incentives become available for service stations to install E85 and biodiesel pumps. Currently, there are also 101 biodiesel distributors that supply biodiesel to almost 75 percent of the counties in the state, all but one concentrated in the Lower Peninsula. (National Biodiesel Board 2007) In addition, one marina in the Upper Peninsula has biodiesel available. However, without additional measures, including incentives for the sale of E85 and biodiesel fuel, and more comprehensive reform also addressed in this report, efforts to encourage additional pump installations may be hampered.

Public Education and Marketing: Current State Activities

State-led activities planned to create demand for alternative fuels and the vehicles designed to use them occur in several agencies across state government. A summary of these activities within each agency is provided below.

Michigan Department of Labor and Economic Growth (DLEG)

The Michigan Department of Labor and Economic Growth's Energy Office promotes energy efficiency and renewable energy resource development to Michigan's residents, businesses, and public institutions.

In the transportation area, the Energy Office has sponsored many applied research projects that continue to advance the performance, production, and market expansion of biofuels. The office has supported numerous conferences, workshops, and collaborations to encourage increased biofuels use, and it also publishes a quarterly newsletter on ethanol developments in Michigan. It has also funded biofuels refueling infrastructure for municipalities, state parks, a marina, farms, and public service stations, and has assisted biodiesel (B20) demonstrations in public fleets, including school and transit buses and county road commission trucks.

Recent funding incentive programs administered by the Energy Office are listed below.

- **Clean Cities Program** is part of a national effort to develop public/private partnerships that promote alternative fuels and vehicles (AFVs). It offers guidelines for planning, technical assistance, and access to financial resources for demonstrating alternative fuels and AFV benefits.
- **Michigan Biomass Energy Program** (MBEP) provides grants to nonprofit and public organizations for state projects that expand markets for energy and fuel derived from Michigan biomass resources.
- **Community Energy Program** provides small grants to nonprofit and public organizations for community projects involving renewable energy project demonstrations, green commuting, consumer education, and other community projects.
- **Biofuel Infrastructure Grants Program** provided incentive funds under Public Act 274 of 2006 to Michigan public service stations to construct new or convert existing fuel delivery systems to sell high blend ethanol E85 and/or biodiesel blends of B20 or higher.

The Michigan Public Service Commission (PSC) is a separate agency under the departmental umbrella of the DLEG. The PSC has strict pricing and regulatory control of natural gas fuels and electricity as they relate to utilities and independent energy providers. The PSC has a very limited role with transportation fuels, such as gasoline and petroleum diesel, except for pipelines as described below. For electric transportation vehicles that may require plug-in electricity, the PSC regulates the statewide electrical grid system. It has a renewable energy program that conducts some education workshops and provides some funding of renewable energy demonstration projects. The PSC's renewable energy program is mostly for wood-based landfill gas and hydro-electrical energy as well as wind/solar generation of electricity. It regulates the inter-connection between the utilities and the renewable energy generating facility, such as a wind generator, which may wish to sell surplus electricity back onto the statewide grid. Some electrical generating utilities use diesel engines as backup or for high peak demand generators for electrical generation as needed during the summer.

The PSC also regulates the construction and permitting of gasoline and petroleum fuels underground pipelines since it controls the placement and regulation of all underground pipelines, including natural gas pipelines and landfill gas pipelines. It does not regulate the retail pricing of renewable or fossil fuels, such as gasoline, diesel, biodiesel, or ethanol blends.

Michigan Economic Development Corporation

The Michigan Economic Development Corporation administers the 21st Century Jobs Fund, which provides grants to jump-start Michigan's economy now and diversify and grow the state's economy in the future. A focus of this fund is alternative energy, and it offers assistance for basic research at universities and nonprofit research institutions, applied research, university technology transfer, and the commercialization of products, processes, and services in the area of alternative energy.

Michigan Department of Management and Budget

The Michigan Department of Management and Budget provides a variety of services to its customers, which include all state agencies, public schools and universities, and local units of government. The Vehicle and Travel Services (VTS) program area is charged with managing and educating customers about the Michigan state fleet, which includes more than 2,000 vehicles that can run on 85 percent Ethanol/15 percent gas (E85), as well as B20, hybrids (gas and electric power), electric, and liquefied petroleum gas (LPG) vehicles.

Michigan Department of Environmental Quality

The Michigan Department of Environmental Quality (DEQ) Environmental Science and Services Division's Pollution Prevention Program provides helpful information about the various types of alternative fuels and alternative fuel vehicles. This information is provided through case studies, fact sheets, and links to useful websites, and is also disseminated during DEQ's annual pollution prevention week.

The DEQ, in cooperation with a host of public and private co-sponsors, also hosted a statewide Agri-Energy Conference and Exhibit which featured renewable energy and biofuels opportunities and challenges in addition to current research and development findings. DEQ also provides a useful document on permitting for biodiesel producers.

Michigan Department of Agriculture

In an effort to promote Michigan agricultural products, expand value-added opportunities, and preserve farmland and the quality of life in Michigan's rural areas, the MDA performs many activities to promote the development and use of agricultural-based renewable fuels. These activities include information generation and dissemination through fact sheets and links to useful pages on the MDA website.

One example of the MDA's effort to promote renewable fuels is a partnership with General Motors Corporation (GM) to promote the benefits of E85 vehicles across the state. As part of this effort, GM provided MDA Director Mitch Irwin with an E85-capable Chevrolet Tahoe, which is being showcased in various ways and events throughout the year. In another example, the MDA has created a valuable resource through its tracking of biofuels plant and production capacity on Michigan maps. Finally, the MDA recently co-hosted a Southeast Michigan Biodiesel Bus Tour for more than 65 people. Participants learned how biodiesel fuel is produced and about plans for the construction of biodiesel facilities in Detroit and the Upper Peninsula. The group also met with Daimler/Chrysler officials and learned that Daimler/Chrysler is factory-filling its Jeep Liberty CRD with biodiesel B5 fuel. The tour included participation in the opening of a 20 percent biodiesel fuel blend (B20) station at a Meijer store in Ypsilanti.

The MDA also works with the Michigan Economic Development Corporation to encourage sustainable biofuels plant development in Michigan. It encourages Michigan agricultural products such as corn and soybean oil, recycling used cooking oils, and cellulosic feedstocks for producing biofuels and related value-added biobased products. This may include using incentives to develop and implement Agricultural Processing

Renaissance Zones or Renewable Energy Renaissance Zones, which provide services and tax benefits to ethanol and biodiesel production plants.

Michigan Department of Natural Resources

The Michigan Department of Natural Resources (MDNR) Parks and Recreation Department is using biodiesel to fuel its equipment. More than 25 facilities across the state are using biodiesel blends (B5 and B20) to fuel their diesel mowers, tractors, bulldozers, backhoes, and other diesel-powered heavy equipment. This program is being monitored with the hope that all the division's diesel equipment will be operating on biodiesel blended fuel in the near future.

As an expansion of the program, B5 marine biodiesel fuel was made available to boaters at the Cedar River State Harbor in the Upper Peninsula. This new harbor was able to offer boaters with diesel engines the option of choosing a biodiesel blended fuel or petroleum diesel and saw biodiesel sales outpace petroleum diesel sales by a margin of 2 to 1. Contributing to the product's success were a series of incentive coupons funded by the Department of Labor and Economic Growth's Biomass Energy Program which provided discounts to boaters to try this new fuel.

THE POTENTIAL OF RENEWABLE TRANSPORTATION FUELS

A recent study found that advanced biofuel technologies could allow renewable fuels to substitute for 37 percent of U.S. gasoline within the next 25 years, with the figure rising to 75 percent if vehicle fuel efficiency were doubled during the same period. However, this potential will be reached only if state and federal policies are developed to encourage the production, distribution, and consumer use of renewable fuels, especially "next-generation" feedstocks and technologies. (Worldwatch Institute 2006)

Cellulosic biomass is a potential future feedstock for ethanol. *Cellulose* is a complex carbohydrate present in all plant matter, including trees and woody debris. Its complex form makes the extraction of fermentable sugars more difficult. Emerging technologies are providing increasingly efficient ways to extract the fermentable sugars from cellulosic sources, many of which are currently in the modern waste stream. According to a 2004 inventory of Michigan forestland, there are 18.7 million acres of accessible forest land to use as a potential source for cellulosic ethanol. (Hansen and Brand 2004)

Another potential "next-generation" feedstock is the organic portion of municipal solid waste. Wastes are a largely untapped resource. This low-cost feedstock is more abundant and contains greater potential energy than simple starches and sugars, such as those available in grains. Currently, agricultural residues are plowed back into the soil, composted, or burned. Paper wastes are put into landfills, and forestry residues are often composted. As cellulosic technology advances, future sources of feedstock for cellulosic ethanol production may include the following:

- *Waste paper* from municipal solid waste
- Grass and tree *trimmings* and other items that may be currently composted
- *Forestry residue* (e.g., residues of forest thinning, timber production waste byproducts)

- *Plant wastes* from industrial processes (e.g., sawdust, paper pulp)
- *Energy crops* that are grown specifically for ethanol production (e.g., switchgrass or willow)
- *Agricultural residue* (e.g., corn stover, cereal straw)

Among potential feedstocks, "forestry sources have some of the best attributes in terms of feasibility and environmental sustainability." (Froese 2007) Michigan forests cover 19.3 million acres (53 percent of the overall land area of Michigan, of which 18.6 million acres is considered timberland. (PSC 2001) While not as productive per acre as corn, these forestry resources are extensive and largely unutilized as biomass sources. In addition, forestry resources provide added benefits such as wildlife habitat, tourism and recreation, improved water and air quality, and protecting soil from erosion. Extracting forest biomass can be accomplished sustainably with existing low-impact harvesting technologies. Forestry resources alone "could supply enough feedstock to continually support six commercial scale lingo-cellulosic ethanol refineries, each producing more than 50 million gallons of ethanol per year." (Froese 2007) Exhibit 2 compares the attributes of several potential ethanol feedstocks.

EXHIBIT 2
Characteristics of Biomass Crops

The ideal biomass crop?	Forest residues	Corn	Short-rotation woody crops	Perennial grasses
Highly productive	No	Yes	Yes	Yes
Widely available	Yes	Limited	Near none	Near none
Site impact	Low	Very high*	Low	Low
Low energy inputs	Very low	Very high	Low to moderate	Low
Noninvasive	Yes	Not relevant	Genetically modified	Usually
Few pests/diseases	Usually	No	Moderately	Usually
Uses existing technology	Yes	Yes	Somewhat	Somewhat
Need storage facilities	Harvest year-round	Yes	Harvest year-round	Yes

SOURCE: Froese 2007.
*It is noted that there are generally accepted agricultural management practices that lessen the site impact of corn production, such as leaving some of the agricultural residue on the land.

Oilseed crops and especially soybean oil will continue to be important feedstocks for biodiesel production. Other vegetable oils such as corn, cottonseed, canola (rape seed), flax, sunflower, and peanut oils may also be used, but these are generally more expensive than soybean oil and not as prevalent in Michigan. Animal-derived products may be increasingly important if the price of soybean oil continues to rise. Products such as tallow, lard, and, animal fat may have both economic and environmental benefits, but research on these is ongoing. "Yellow grease," or recycled cooking oils and fats, is another attractive feedstock that should continue to increase in supply as the restaurant industry grows; while it may need more processing than "virgin" vegetable oils, its use in biodiesel could help solve a growing waste disposal problem. (Stroup 2004)

The lowest-cost biofuels are expected to continue to be ethanol and biodiesel. Beyond these two lowest-cost options, the costs for producing next-generation biofuels are expected to be in a range that should make them generally competitive with first-generation technologies and able to fully compete with conventional gasoline and diesel fuel without subsidies within the coming decades. The ability of next-generation technologies to use abundant cellulosic feedstock that do not rely on food crops offers the promise of dramatically expanding the amount of biofuels that could be produced for transportation needs in the future. (Worldwatch Institute 2006)

Biofuel's potential is enormous. It is estimated that there are sufficient amounts of urban waste and agricultural and forest sources in the United States to produce enough biofuels to displace 30 percent of current gasoline consumption. (Froese 2007) Other studies suggest that biomass could potentially supply up to the equivalent of 7.5 trillion gallons of gasoline or 278 billion MW of energy by the year 2050. This translates into powering the equivalent of 177 trillion homes. (EPA 2007) In the most optimistic scenarios, bioenergy could provide for more than two times the current global energy demand, without competing with food production, forest protection efforts, and biodiversity. In the least favorable scenarios, however, bioenergy could supply only a fraction of current energy use by 2050, perhaps even less than it provides today. (Worldwatch Institute 2006)

Chapter 3: Vision for Renewable Fuels in Michigan

GUIDING PRINCIPLES

In creating the commission, the legislature and governor made clear their intention that the commission was directed toward promoting alternative fuels for vehicles in order to strengthen the agriculture and auto sectors of the Michigan economy. They have also made clear their intent to establish Michigan as a leader in the alternative fuel vehicle industry. Recommendations developed by the Michigan Renewable Fuels Commission should accomplish the following:

- Enhance the security of Michigan and the nation by reducing reliance on imported petroleum.
- Improve environmental quality, especially reducing emissions of greenhouse gases into the atmosphere.
- Expand markets for agriculture products.
- Provide economic development opportunities for Michigan and its urban and rural areas.
- Establish Michigan as the leader in research and development, production, distribution, and marketing of renewable fuels and the vehicles/machinery and industries that use them.
- Stimulate private investment in the advanced biofuels industry in Michigan.
- Maintain and expand Michigan's agricultural and forested lands to support sustainable renewable fuels and feedstock production and our land-based industries, while protecting sensitive environmental lands.
- Support public and private research institutions through proactively seeking and securing funding for research, development, and commercialization of new or refined feedstocks and new and more efficient production and utilization methods.
- Optimize production of renewable fuels by encouraging the utilization of co-products/waste.
- Foster a general public that is well educated about the true costs and benefits of various fossil and renewable fuel options.
- Educate the general public on the reliability of renewable fuels.
- Ensure that consistent renewable fuels standards are set and enforce them.
- Provide Michigan consumers with economically competitive choices of renewable fuels.
- Ensure that there is a well-trained supply of mechanics and fleet operators, fuel handlers, and storage facility managers within the state to handle the transition to renewable fuels.
- Foster a general public that is informed about alternative fuel vehicles and the potential dangers of after-market conversion products.

- Encourage through the use of incentives the production and purchase of alternative fuels and the vehicles/machinery that use them.
- Encourage the development of an efficient statewide renewable refueling infrastructure and distribution network and communicate this to consumers.
- Develop a statewide strategy for encouraging ongoing communications among fuel producers and vehicle manufacturers for recommendations on which renewable fuels/blends/standards will be developed and promoted.
- Identify incentives and eliminate disincentives for the production, distribution, and use of renewable fuels.

Chapter 4: Feedstocks and Fuel Production

Michigan's citizens and businesses currently pay more than $12.5 billion to consume 5.8 billion gallons of imported, fossil fuel-derived transportation fuels. Fortunately, the commission believes that much of this demand can be met alternatively through the growing and processing of Michigan-grown agricultural and forestry feedstocks. Indeed, preliminary modeling suggests that Michigan has the feedstock potential to produce more than 1.5 billion gallons of biofuels within the next 20 years. The purpose of these recommendations is to set Michigan squarely on a path toward realizing this potential, and to begin investing in the new wealth, jobs, and economic security that will result.

Where possible, the recommendations are specific as to the party responsible for implementation. Recommendations for which this is not possible are directed to the Governor's Office and Michigan Legislature for considering and assigning responsibilities.

RECOMMENDATIONS

1. The **Michigan Renewable Fuels Commission** should continue to function as a catalyst for research, provide coordination of renewable fuels activities and offer policy recommendations as needed, review the capacity to implement the ideas, and encourage collaboration between public and private interests.
2. Fund and develop a **Michigan Renewable Fuels Model** that can be used to evaluate the economic potential of various biorefinery/feedstock systems, including biorefinery technology availabilities and efficiencies, feedstock availabilities and capacities, supply chain requirements (transportation, related logistics, and buyer/supplier configurations), investment and employment impacts, carbon and other environmental impacts, and generation of competitively based returns at various price levels for system inputs and outputs. This model is essential to create an integrated approach to policy and economic development efforts that can optimize the state's business investments and develop a competitive and sustainable bioenergy economy.
3. Establish the **Next-Generation Renewable Fuels Feedstock Program** to encourage the sustainable production of next-generation bioenergy and biomass materials while reducing risk to landowners. The program should be linked to the development of prospective biomass customers, and shall include the following:
   a. Payments to landowners/operators that produce dedicated energy crops (payments awarded to projects that show the greatest promise in terms of sustainability)
   b. Tax incentives or loan guarantees for the purchase of new equipment required for energy crop establishment, harvest, transport, or storage
   c. Research on agronomic production systems for energy crops in Michigan and provision of educational materials and technical assistance for sustainable energy crop production

d. Creation of a "nursery" of energy crops as a basis for a biotechnology- driven plant breeding program to enhance and improve energy crops and other biomass plants, as we know them today

4. Reserve a **minimum** of **six** Renaissance Zones that would encourage production facilities that utilize cellulosic materials for the production of renewable fuels.

5. Support the United States Department of Agriculture (USDA) **in giving landowners the option to remove *without penalty* lands that are not highly environmentally sensitive from various USDA conservation programs** (especially the Conservation Reserve Program) and return them to crop production, including energy crops. We urge the Secretary of Agriculture to revisit the decision made earlier this year disallowing such flexibility.[1]

6. State actions to promote renewable fuels and their production facilities in Michigan should be **feedstock neutral** to available fuels (liquid and gaseous fuels), conversion technologies, and multiple renewable feedstocks. Preference should be given to Michigan-grown feedstocks. Michigan must embrace and provide incentives to promote existing and new facilities that utilize bioenergy crops, including, but not limited to the following: pyrolysis and gasification, process heat and co-generation, biomass burning stoves, direct combustion, cellulosic ethanol, advanced biodiesel, biobutanol, hydrogen fuels, and co-gasification with various biomass feedstocks utilizing integrated gasification-combined cycle.

7. **Consolidate** renewable fuels-related promotion and economic development efforts in various state departments within a single agency.

8. Promote the "**one-stop shop**," including the Ombudsman Office, in the Michigan Economic Development Corporation (MEDC) to streamline and expedite regulatory, technical, and financial assistance (e.g., permitting process and grants for new and expanded plants clarified and expedited) for renewable fuel project developers.

9. Develop a **state/private match program** for federal grants that promotes feedstocks and production of renewable fuels, including, but not limited to, restoring the dedicated funding of the Forest Financing Authority within the 21st Century Jobs Fund to be used for renewable fuels initiatives.

10. **Provide incentives to developers of early-stage technology projects and processing centers** (e.g., zero-percent loans, loan guarantees, incentives, grants) through the following actions:
    a. Establish a **$50 million package** within the 21st Century Jobs Fund for next-generation renewable fuel projects over two years **and another $150 million** over the following three years. Priority will be given to projects that utilize Michigan-based raw materials, goods, and services.

[1] Voting record on this recommendation was 11–9.

b. **Explore and/or develop new funding mechanisms** and sources of revenue to support next-generation renewable fuel projects including, but not limited to, the following:
   - Federal grants, including the Department of Energy grant to support the development of small-scale cellulosic biorefineries in Michigan[2]
   - The ability to develop, use, and/or monetize state-owned oil, gas, and forest reserves, exclusive of the constitutionally protected royalties and severance taxes, and dedicate these new funds solely to foster renewable fuels and alternative energy technology and innovations to reduce reliance on energy imports in partnership with private industry
   - Other revenue-generating mechanisms, such as earmarking a portion of any potential increase in taxes.

c. Consider as a future strategy the **development of a Request for Proposals** in a competitive process to allocate funding to private/public partnerships using project categories and selection criteria outlined in Appendix H.

d. The state should provide leverage resources with federal and local resources to **establish Regional Biomass Processing Centers** through a major research university that has matching funds, in conjunction with the development of prospective biomass customers.

11. Preserve and dedicate a portion of the **21st Century Jobs Fund** for applied research and development of renewable fuel production and utilization technology.

12. Create incentives to improve the **technology transfer process** to encourage the commercialization of promising technology discoveries from Michigan institutions and universities, in order to maximize jobs and investments in Michigan.

13. The MEDC shall **identify, publish, and market an inventory of prime sites for co-location of new renewable fuel plants** with existing facilities, such as pulp mills, industrial facilities, power plants, food processing plants, etc.

14. Encourage **technology and process improvements** of existing renewable fuel production facilities to promote long-term sustainability.

[2] View grant opportunity synopsis at *http://www.grants.gov/search/search.do?oppId=13741&mode=VIEW*

Chapter 5: Distribution and Infrastructure

The following recommendations for changing Michigan law and policy are designed to meet the two most pressing needs for the state: 1) insuring the availability of biofuel pumps to the consumer, and 2) insuring competitive pricing of the product.

RECOMMENDATIONS

15. **Continuing Michigan's Commitment**. Public Act 274 of 2006, creating a service station matching grant program for renewable fuels infrastructure, is scheduled to sunset in September of 2007. Through a modest expenditure, the act has assisted retailers in building the pumps and infrastructure necessary to provide biofuels to the state's consumers. A total of 17 stations in 14 counties have been provided assistance. The program should be amended as follows:
    a. **Initiate another round of grants**. The new grant cycle should total $7 million for the installation of pumps and infrastructure at the retail level.
    b. **Increase the maximum grant** amount from $12,000 to $20,000.
    c. **Eliminate the present requirement that no more than 15 percent of the total fund can be spent in any one county or granted to any one company.** Instead, the legislature should adopt language that provides that no more than 30 percent of total expenditures can be spent in any one county, and that no more than 50 percent of total grant funds can go to any one company.

E85

Michigan's goal is to be a leader among the states in ethanol production and use. To achieve that goal, the state must do more than simply grow the crops, refine the product, and then ship it off to other locales for use. Michigan needs to take affirmative steps to assure that E85 is available to consumers all across the state. To meet that goal the state legislature should adopt a statute that includes the provisions listed below.

16. Any future **economic development incentives** provided by the Michigan Department of Labor and Economic Growth for the development of new ethanol production facilities should contractually obligate the recipient of such grants by requiring them to show proof of good faith to offer such products to Michigan retailers/distributors before any development incentives are paid. Such good faith offers will be at a fair market value.
17. **Motor fuel franchise dealers or distributors should be allowed to obtain biofuels from a supplier other than a franchise distributor.** Michigan law should provide that any franchise which prohibits or discourages a dealer from purchasing or selling E85 from a firm or individual other than the distributor is null and void as it pertains to that fuel if the distributor does not supply or offer to supply the dealer with E85 fuel. Distributors that violate the law by entering into exclusivity contracts should be subject to a fine.
18. An Underwriters' Laboratories (UL) standard for E85 pumps and infrastructure is being researched by UL and its stakeholders. Although there have not been any E85 pump failures in either Michigan or the nation, a standard is urgently needed

now. Until such a UL standard is developed, the RFC recommends that the governor work with the State Fire Marshall Office and the Michigan Congressional Delegation to **have Congress adopt a federal "safe harbor" provision for retail marketers desiring to install and operate E85 pumps.**[3]

Biodiesel

Biodiesel offers significant environmental benefits. To expand the use of biodiesel, three important steps are necessary.

19. In order to promote the use of B20 biodiesel in Michigan, a national American Society for Testing and Materials (ASTM) standard for B20 needs to be developed and approved. Such a step will resolve warranty issues for users of the fuel. In the interim, while such a national standard is being developed, **the Michigan Department of Agriculture should promulgate rules to adopt an interim standard for B20.** Such a standard should be based upon the standard currently in use by the Engine Manufacturers Association (EMA).
20. The legislature should **appropriate to the Michigan Department of Agriculture sufficient funds to meet the mandates of P.A. 44 of 1984** (Motor Fuels Quality Act), which requires inspection of diesel and biodiesel fuel in Michigan.
21. **Motor fuel franchise dealers and distributors should be permitted to obtain biofuels from a supplier other than a franchise distributor.** Michigan law should provide that any franchise which prohibits or discourages a dealer from purchasing or selling biodiesels from a firm or individual other than the distributor is null and void as it pertains to that fuel if the distributor does not supply or offer to supply the dealer with any biodiesels. Distributors that violate the law by entering into exclusivity contracts should be subject to a fine.

Green Retailers

22. The state should **establish a "Green Retailers" program** that rewards retail and wholesale outlets that attain benchmarks in the sale of biofuels. Such a step would provide state recognition for achievement and provide important cost-savings to both the seller and the consumer of biofuels. To provide alternative fuel choice to consumers, promote state energy security needs and reduce greenhouse gas emissions, a goal of achieving a minimum of 10 percent alternative fuel use in the transportation sector by 2012 is a critical first step. Access to alternative fuels should address both gasoline and diesel fuels. To achieve the goal of 10 percent alternative fuel use in gasoline transportation fuels, a Green Retailer designation would be provided by the state to any retail outlet that sells a minimum level of gasoline biofuel (E85).
23. A Green Retailer will **receive incentives to support the infrastructure development needs for E85** and to help ensure that the retailer is able to provide value-based pricing (ethanol's lower energy content requires a lower price per gallon to offset the fuel economy reduction) for sustainable consumer use. The applicable incentive will be a reduction in the payment of motor fuel tax on all

[3] Voting record for this recommendation was 13–6.

gasoline sold at the facility. These incentives are needed in the early stages of E85 growth to accelerate the development of new production, distribution, and retail channels. The Green Retailer designation and incentives should reflect a growing use of renewable fuels as outlined below:

E85 Sales	Reduction in Motor Fuel Tax	Date
2%	1 cent	Thru 2010
5%	2 cents	Thru 2010
5%	1 cent	2011–2012
10%	2 cents	2011–2012

24. **The same incentives should apply to diesel transportation fuels,** as long as a retailer meets the requirements of a Green Retailer for E85. A Green Retailer designation would apply for similar minimum levels of B20 biofuel sales. The reduction in motor fuel tax would apply to the amount of diesel fuel sales at the facility.
25. As an alternative to the application of incentives to the Green Retailer described above, **a feebate[4] approach could be considered where increases to the motor fuel tax (fee) are used to create a fund that would provide Green Retailers with an incentive (rebate) amount for each gallon of E85 or B20 sold.** Such a public/private partnership is critically needed to accelerate consumer access to alternative fuels and support consumer value, setting the stage for increased use of renewable fuels in the transportation sector beyond low-level blends. The amount of the fee (per gallon of gas sold) could initially start at 0.01/gallon and should be increased as needed to achieve a goal of 10 percent alternative fuel sales by 2012. The amount of the fee and the amount of the rebate should be reviewed on an annual basis by the RFC.

Low-Carbon Fuels

Several states have taken steps mandating that a certain minimum percentage of fuels sold within the state come from renewable fuels. These steps are part of a long-term goal in these states to reduce the state's carbon footprint, thereby reducing the amount of carbon dioxide emitted into the atmosphere.

Both E85 and B20 produce significantly less carbon dioxide when burned. Adoption of a low-carbon renewable fuel standard in Michigan, coupled with a long-term goal, such as achieving 25 percent renewable fuel use in the state by 2025, would provide important state leadership on climate policy, while promoting our agriculture and manufacturing sectors.

In order to begin a policy process that moves Michigan into a leadership role on climate issues while at the same time encouraging the use of biofuels, Michigan should take the step listed below.

[4] A government program designed to encourage the use of renewable fuels by increasing the fee on gasoline and offering a rebate on renewable fuels. [Blend of fee and rebate.]

26. **The governor should initiate the development of a strategy to enact a low-carbon emission transportation fuels program in Michigan.** Such a program should review the regulatory and legal mechanisms needed to enact a low-carbon fuels approach in Michigan. The strategy should identify mechanisms that will result in Michigan achieving 25 percent use of renewable fuels by 2025. This strategy should be integrated into and be consistent with an overall carbon reduction strategy for the state.

Chapter 6: Public Education and Marketing

A robust renewable transportation fuels *market* is essential if Michigan is to be successful in the area of renewable transportation fuels. Creating this market requires public education and marketing efforts.[5]

Several agencies across state government are currently involved in efforts to create demand for renewable transportation fuels and the vehicles designed to use them. These efforts are described in Chapter 2. While current state promotion and marketing efforts are commendable, the state must take the following steps in order to create a robust renewable transportation fuels market in Michigan:

- **Lead by example**. If the state is to encourage the public to use renewable transportation fuels, it should also continue to focus efforts within. There are many ways in which state agencies can increase their use of renewable transportation fuels and the vehicles that use them (RFVs—renewable fuel vehicles).
- **Develop a statewide marketing campaign**. The state should develop and implement a consistent, statewide marketing campaign to increase consumer understanding and awareness—leading to demand—of renewable transportation fuels. While the specific campaign strategy should be left to marketing professionals, the RFC will suggest the audience, objectives, messages, and tactics.
- **Create incentives** to encourage the use of RFVs and renewable transportation fuels.

RECOMMENDATIONS

Lead by Example

There are many ways in which state agencies can lead by example and increase their use of renewable transportation fuels and the vehicles that use them.

27. **Coordinating and implementing the state's role**. The governor should advance the vision, goals, and recommendations of this report by identifying one agency/entity/staff person to coordinate renewable fuel-related interagency decisions, establish appropriate mechanisms for stakeholder input, secure federal funds to advance the recommendations of this report, and manage the information clearinghouse and statewide marketing campaign (see related recommendations below).
28. **Renewable fuel use**. The state should continue to use renewable transportation fuels whenever practical and cost-effective and partner with public and private entities to foster the availability of these fuels for all state department users of automotive fuel.

[5] While the RFC supports efforts to increase use and demand of renewable fuels and vehicles that use them, commission members also are aware of the many challenges facing the renewable fuels industry. These challenges are described in Chapters 1 and 2 and should be considered as these recommendations are implemented.

29. **RFV procurement preference**. In determining the winning bidder for state contracts involving the use of motor vehicles, the Michigan Department of Management and Budget should continue to give preference to RFVs whenever practical, with or without a federal mandate.
30. **Renewable fuels use and promotion**. The Department of Management and Budget should continue to administer the state's flexible fuel fleet awareness program, which is designed to facilitate the use of renewable transportation fuels in the state's fleet. To date, the plan has ensured that
    - all RFVs in the state's fleet are identifiable;
    - state employees driving RFVs are aware of nearby stations offering renewable fuel; and
    - state employees are encouraged to use renewable fuels when operating RFVs and diesel-powered vehicles in the fleet, whenever practical and cost-effective.

Develop a Statewide Marketing Campaign

31. While the specific strategy for a **statewide marketing campaign** should be left to marketing professionals, the RFC suggests the following audience, objectives, messages, and tactics.

Audience (in order of priority)

- End-users (including children)
- Distributors/station owners/mechanics
- Fleet managers
- State and local government/schools

Objectives

- Educate consumers on options, costs, challenges, and environmental benefits as described in Chapter 2.
- Encourage use of renewable transportation fuels and the vehicles that use them.
- Cultivate and maintain Michigan's image as a renewable energy leader.

Messages

- Renewable transportation fuels are a good choice because they decrease dependence on foreign imports while stimulating economic growth domestically, promote sustainability of resources, and reduce emissions and their environmental impact.
- Renewable fuels are increasingly accessible.
- Everyone should become informed and be encouraged to participate (see Audience above).

Tactics

The marketing campaign should include the following tactics/activities.

32. Develop a **recognition program,** such as the Green Retailers program recommended in Chapter 5 (Distribution and Infrastructure), that rewards and provides additional marketing opportunities for fleets, fuel retailers, and auto dealers in Michigan that have/sell a significant number of RFVs, use/provide clean, American-produced fuels, and educate their customers.
33. Encourage more cities to participate in the **Clean Cities Coalition**, which provides technical, policy, and program information about RFVs.
34. Create a **Flexible Technical (Flex-Tech) Assistance Program** to provide assistance to fleet managers who want to evaluate the feasibility and cost of adding RFVs and refueling facilities to their operations. Services could include low-cost training for vehicle mechanics through certified institutions and testimonials from fleet managers who have used renewable transportation fuels.
35. Play a leadership role in **educating K–12 students** about the benefits, challenges, and opportunities of renewable transportation fuels and the vehicles that use them.
36. **Develop and promote a clearinghouse for information** regarding renewable fuel vehicles and renewable transportation fuels. This information should be available on the Web and include fact sheets on the economic impact of renewable transportation fuels, the environmental impact of fuel production and use, reliability of the fuels, challenges, etc.
37. Make available an **RFV license plate or decal** for RFV owners to display.
38. To **increase the visibility of RFVs** as well as the public's comfort level with these vehicles, the state should
    a. **create partnerships** with auto manufacturers and suppliers, energy companies, technology providers, producers, etc. to assist in promotion activities,
    b. create "brand" identification for retail outlets that provide renewable fuels and secure placement on Michigan Department of Transportation administered **Logo Signs**, and
    c. work with private companies to add renewable fuel retail outlets to the database that drives **in-vehicle navigation systems**.

Create Incentives

The state should offer the incentives listed below to encourage the use of RFVs and renewable transportation fuels.

39. **Renewable Fuel Revolving Fund**. Explore the state's ability to use revenue generated from the sale of Energy Policy Act credits, combined with any revenue generated as a result of the recommendations in this report, to establish a Renewable Fuel Revolving Fund. The fund would be used to support these recommendations and further educate, promote, and encourage the use of renewable fuel as well as the vehicles that use them.
40. **Renewable Fuel Vehicle Sales Tax**. The state should consider tax policies that encourage the purchase of RFVs through sales tax reductions or a decrease in the annual vehicle registration fee for an RFV.

41. **Renewable Fuel Tax Refund for Commercial and Fleet Users**. The state should consider incentives for operating a fleet that uses a renewable fuel.
42. **School Bus Grants**. The state should vigorously promote and encourage the use of incentives, such as grants and incentives provided through the U.S. Environmental Protection Agency's Clean School Bus USA program. The grant could also aid in promotion of renewable fuels by allowing relevant labels to be placed on the buses.[6]

[6] This would require amending the Pupil Transportation Act 187 of 1990, MCLA 257.1833(1)(h), which currently prohibits any insignia, advertisements, stickers, or markings on a school bus other than specified by statute.

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Appendix A:
Resource Team

We appreciate the dedication of the commission members who also presented at commission meetings, the technical advisors, and the other presenters who served as valuable sources of knowledge and experience in their respective fields. Many of their presentations and handouts can be found on the commission website at: *http://www.renewablefuelscommission.org/events.htm.*

- Loren Beard, DaimlerChrysler
- Charlie Becker, Plum Creek Timberlands
- Steven Bertman, Western Michigan University
- David Cole, Center for Automotive Research
- Robert Craig, Michigan Department of Agriculture
- Jim Croce, NextEnergy
- Bruce Dale, Michigan State University
- Margaret Gale, Michigan Technological University
- Charles Griffith, Ecology Center
- Suzanne Hunt, The Worldwatch Institute
- J. Peter Lark, Michigan Public Service Commission
- Peter Madden, Plum Creek Timberlands
- Curtis Magleby, Ford Motor Company
- Tom Martin, Michigan Department of Labor and Economic Growth
- Simon Ng, Wayne State University
- Jan Patrick, Michigan Department of Labor and Economic Growth
- Steven Pueppke, Michigan State University
- David Reed, Michigan Technological University
- Keith Reinholt, Michigan Soybean Promotions Committee
- David Shonnard, Michigan Technological University
- Mary Beth Stanek, General Motors Corporation
- John Sutherland, Michigan Technological University
- Kevin Webber, Toyota Technical Center

Appendix B:
Public Act 272 of 2006

Approved by the Governor

July 7, 2006

Filed with the Secretary of State

July 7, 2006

EFFECTIVE DATE: July 7, 2006

STATE OF MICHIGAN

93RD LEGISLATURE

REGULAR SESSION OF 2006

Introduced by Reps. Mayes, Spade, Angerer, Kehrl, Dillon, Leland, Espinoza, Polidori, Farrah, Clemente, Gleason, Lemmons, Jr., Cushingberry, Miller, Donigan, Anderson, Vagnozzi, Gonzales, Clack, Bieda, Wojno, Accavitti, Brown, Byrnes, Adamini, McDowell, Sheltrown, Condino, Alma Smith, Meisner, Hopgood, Williams, Zelenko, Bennett, Kathleen Law, Whitmer, Tobocman, Gillard, Sak, Kolb, Lipsey, Virgil Smith, Byrum, Hunter, Waters, Murphy, Plakas, Cheeks, Lemmons, III and McConico

ENROLLED HOUSE BILL No. 5181

AN ACT to create a commission to investigate alternative fuels; to define certain alternative fuels; to determine certain powers and duties of the commission; and to repeal acts and parts of acts.

The People of the State of Michigan enact:

Sec. 1. This act shall be known and may be cited as the "renewable fuels commission act".

Sec. 2. As used in this act:

(a) "Alternative fuel" means a fuel composed of biomass or another fuel that does not have petroleum as a base or a blend of a nonpetroleum-based fuel and a petroleum-based fuel. Alternative fuel may include, but is not limited to, biodiesel and ethanol.

(b) "Biodiesel" means a fuel composed of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats and, in accordance with standards specified by the American society for testing and materials, designated B100, and meeting the requirements of D-6751, as approved by the department.

(c) "Biomass fuel" means a fuel made from plant material, vegetation, or agricultural waste.

(d) "Ethanol" means a substance that meets the American society for testing and materials standard in effect on the effective date of this act as the D-4806 specification for denatured fuel grade ethanol for blending with gasoline.

Sec. 3. (1) The renewable fuels commission is established within the department of agriculture. The commission shall investigate and recommend strategies that the governor and the legislature may implement to promote the use of alternative fuels and encourage the use of vehicles that utilize alternative fuels. The commission shall also identify mechanisms that promote research into alternative fuels.

(2) The commission shall identify mechanisms that promote effective communication and coordination of efforts between this state and local governments, private industry, and institutes of higher education concerning the investigation, research into, and promotion of alternative fuels.

(3) The commission may also review any state regulation that may hinder the use, research, and development of alternative fuels and vehicles that are able to utilize them and recommend changes to the governor.

Sec. 4. The commission shall consist of the following members, appointed by the governor within 90 days of the effective date of this act:

(a) The director of the department of agriculture or his or her designee. The director of the department of agriculture shall be the chair of the commission.

(b) One member representing the Michigan economic development corporation.

(c) One member representing the department of labor and economic growth.

(d) At least 1 member from the largest organization in this state that represents corn producers exclusively.

(e) At least 1 member from the largest organization in this state that represents soybean producers exclusively.

(f) One representative of automotive fuel blenders in this state.

(g) One representative of retail petroleum sellers in this state.

(h) One representative of petroleum suppliers in this state.

(i) One representative of biodiesel producers.

(j) One representative of ethanol producers.

(k) One representative of environmental organizations.

(*l*) Three representatives of the automotive manufacturing industry.

(m) Three representatives of colleges and universities in this state that are engaged in alternative fuel research.

(n) Any other member that the governor concludes is necessary to further the commission's purposes.

Sec. 5. No later than 1 year after the effective date of this act, the commission shall issue a written report on its investigation and recommendations to the legislature and the governor. Follow-up reports shall be issued at least annually and may be issued more frequently if the commission deems it advisable.

Sec. 6. This act is repealed effective January 1, 2010.

This act is ordered to take immediate effect.

REFERENCE

Michigan Legislature. July 7, 2006. *Public Act 272 of 2006.* [Online, cited 6/6/2007]. Available: *http://www.legislature.mi.gov/documents/2005-2006/publicact/htm/2006-PA-0272.htm*

Appendix C:
Michigan Renewable Fuels Commission Members

Name	Title, Affiliation	Residence
Mitch Irwin, Chair	Director, Michigan Department of Agriculture	East Lansing
Dr. K. Joel Berry	Department Head, Mechanical Engineering Department, Kettering University	Flint
Dr. Steven Bertman	Professor, Chemistry Department, Western Michigan University	Kalamazoo
Bruce Brownlee	Senior Executive Administrator, External Affairs, Toyota Technical Center USA Inc.	Ann Arbor
James Byrum	President, Michigan Agri-Business Association	Onondaga
Steven Chester	Director, Michigan Department of Environmental Quality	Williamston
David Cole	Chairman, Center for Automotive Research and Member, Michigan Economic Development Corporation Executive Committee	Ann Arbor
James Croce	Chief Executive Officer, NextEnergy	Grosse Pointe Farms
Jeffrey Ehlert	Chairman, Great Lakes Ethanol LLC and Board Member, Midwest Grain Processors LLC	Blissfield
Dr. Zoran Filipi	Associate Research Professor, Automotive Research Center, University of Michigan	Ann Arbor
Charles Griffith	Auto Project Director, Ecology Center	Ann Arbor
Brian Horsford	Director of Gas Stations/C-Stores, Meijer	Grand Rapids
Susan Kuck	President, Wilson Petroleum Company	Saginaw
J. Peter Lark	Chairman, Michigan Public Service Commission	Okemos
Trevor Lauer	Vice President of Retail Marketing, DTE Energy Company	Rochester
Curtis Magleby	Director of State/Local Government Affairs, Ford Motor Company	Saline
Peter Madden	Program Director, Plum Creek Timber	Gladstone
Kimberly Mahrle	Officer/Corporation Secretary, G. E. Wacker Inc.	Manchester
Kirk Mercer	President, R. W. Mercer	Jackson
Deborah Morrissett	Vice President of Regulatory Affairs, DaimlerChrysler	Troy
Barry Mumby	Manager, Wakeshma Farms LLC; representing the Michigan Soybean Promotion Committee	Colon
Bruce Noel	Owner and Operator, Noel Farms; representing the Michigan Corn Growers Association	Leslie
Michael Petersen	Owner and President, Petersen Oil Company	Gowen
Dr. Steven Pueppke	Director, Office of Biobased Technologies, Michigan State University	Okemos
Dr. Mary Beth Stanek	Director, Environment and Energy, General Motors	Grosse Pointe
Richard Vande Vusse	President, VanAire Inc. and Ag Solutions Inc.	Escanaba
Rose Wilson	Director of Agency Services and Fleet Operations, Michigan Department of Management and Budget	Haslett

Appendix D:
Summary of Public Input

PUBLIC COMMENTS: OCTOBER 26–DECEMBER 18, 2006

The Michigan Renewable Fuels Commission used a variety of means to solicit public comment: public comment opportunities at the end of the first formal commission meeting, on-line comments through the commission website (*www.renewablefuelscommission.org*), and submission of written and e-mail comments.

To date, one person spoke during the public comment period at the end of the first commission meeting and 18 online and 7 written and e-mail comments were received. The public comments were compiled and summarized by Public Sector Consultants and the main points are included below.

Public Comment Period (November 30, 2006)

Only one person from the audience wished to make a comment, and noted the following:

- The "bigs" aren't on the commission—large petroleum and refining companies. Michigan needs to consider their perspective in this discussion; they are not predisposed to government mandates.
- State government needs to support the "agricultural distribution nexus."
- Big petroleum companies do not want mandates, so don't use a "stick." Offer a "carrot" elsewhere, such as on the agricultural and distribution side of things. Don't involve the refinery.
- Public awareness is also key.

Open-Ended Written/Email Comments

Renewable Energy and Electricity

Three people e-mailed comments related to the broader issues of renewable energy and electricity generation.

- The state needs to demand that 25 percent of the electrical needs come from renewable fuels in the next 15 years and a significant portion must come from Michigan-based companies.
- Every school, business, residential development must utilize windmills for energy. The state should provide a tax break if the windmill company is Michigan-based so we have jobs too.
- No desire for more coal, natural gas, or fossil fuel based electrical plants. Michigan needs jobs in the renewable fuel industry. Make a 15-year commitment.
- There are energy machines that can be of use in forwarding the State of Michigan's economy. Among them are electrical generators that have no moving parts and a vertical windmill that is more efficient that anything now in existence; the test model has been running for a couple of years.

- The production of hydrogen and electricity is relatively easy; the machines available can produce heat for individual homes at a lower cost than anything on the market today. The conversion of the available mechanical energy directly to heat generates more usable energy than going through the other conversions.
- The renewable energy fuels being used are poor choices, given the alternatives. There exists the ability to create enough energy to run the state, but need production capacity. Lower generation costs will result in the lower cost of finished products.
- This state doesn't have net metering. If any business, home, or school has excess energy to sell, then the electric companies must purchase it at the specified rate.
- Is there any possibility that the commission may expand beyond renewable fuels and into other areas of consumer energy consumption?
- Are the renewable energy facilities described in the enabling legislation to be used solely for the production and distribution of replacements for fossil fuels such as gasoline, or is it possible that they be used for green electricity production?

Renewable Heating Fuels

One person focused his/her comments on renewable heating fuels, specifically corn.

- Hoping there would be some attention given to alternative/renewable heating fuels.
- There were no grants, low interest loans, or tax credits to support the installation of corn boilers in a local school district. The school district and the community saw the value in burning a locally available resource and decided to continue with the installation even at an additional cost compared to a conventional natural gas boiler.
- The corn boiler industry is still in its infancy and with further demand, it will develop and be refined with a reduction in material and installation cost.

Ethanol and Biodiesel

Two people mentioned the need for support and additional supply of ethanol and biodiesel.

- Give 110 percent support to this industry. Support Michigan-based companies in ethanol production in our corn-growing areas.
- Owners and operators of alternative fuel vehicles would buy biodiesel now, if it were available. There are no retail biodiesel outlets in Lansing and it is greatly needed.

Other topics

- A representative from Wayne State University should be added to the members of the Renewable Fuels Commission given their activities of their Research and Technology Park and their College of Engineering.
- One person asked that Michigan require all residential homes to have recycling bins; the landfills can use prison labor to sort the trash into the appropriate recycling trucks.
- Many people commenting offered their assistance in gathering or providing resources to the commission on the above topics.

Online Public Comments

What do you think needs to be done in Michigan to promote the development and use of alternative fuels in Michigan?

Incentives/Disincentives

- Tax breaks to "early adopters" of alternative fuels.
- Incentives to: produce alternative fuels, sell alternative fuels, produce alternative fueled vehicles, and purchase these vehicles
- Tax credit to manufacturers of E85, hybrid and clean diesel automobiles.
- Tax credit to suppliers of alternative fuels.
- Raise taxes on gasoline so that the price stays steady at $5 per gallon.
- Make alternative fuels cost competitive.

Feedstocks/Fuel Supply

- Research how much agricultural crops are available to be made into alternative fuels, both in Michigan and in surrounding states.
- Michigan should allow/promote the use of waste vegetable oil (WVO) to power diesel automobiles, diesel generators, and buses. WVO has 26 percent less CO emissions and 39 percent less particulate mass than standard diesel. www.greasecar.com can help convert your vehicle.
- This is such an excellent opportunity for farmers, the challenge is making is profitable for them. The issues are different for large scale farmers compared to a smaller (200 acre) farm. Family farmers have much to gain by a successful alternative fuel program, but seed, fertilizer, equipment, and fuel have to be affordable.
- Produce biofuels from hemp.
- Create, provide, and maintain a viable infrastructure for the easy delivery and use of alternative fuels.

Production/Processing

- Make sure Michigan has enough alternative fuel plants to process to capacity.
- Promote the establishment of businesses/cooperatives to produce and process materials for cellulosic ethanol.
- Develop sustainable production methods.

Marketing/Education

- Ensure a market for the fuel produced, whether the market is in Michigan or out.
- Educate the consumer about using alternative fuels, the cost advantage for doing so, and what vehicles are able to utilize ethanol and/or biodiesel.
- Assure motorists that their vehicles can burn alternative fuels.
- Have more demonstration projects so the general public can see alternative fuels working. Publish success stories from other areas.

Policy

- Support Minnesota's policy that mandated 2 percent biodiesel in all diesel sold in the state, however, with a more appropriate phase-in.
- Expansion of ultra low sulfur diesel will encourage advanced diesel engines in the marketplace in the U.S.
- It is the responsibility of government to assist in the well being of its citizens; it needs to drive the alternative fuels issue.

Research

- The true impact on fossil fuel use must be ascertained at each stage of developing an "alternative fuels" industry in Michigan. If fossil fuels are used in growing, processing, converting, and purifying biofuel feedstocks and products, there may be little or no (or negative) impact on fossil fuel use in adopting biofuels.
- Determine if there are any ramifications to our air or other public issues.

Renewable Energy (Electricity and Heating)

- Consider building large wind farms off of Michigan's shoreline, out of shipping lanes, migratory bird paths, and without damaging sensitive environmental shoreline features. Wind energy should be used to power electric and biofuel hybrid vehicles.
- With the popularity of LEED-certified buildings growing, people are paying extra for renewable energy. If Michigan creates enough certified renewable power, then Renewable Energy Credits could be sold out of state (1.5 cents per kWh). Michigan citizens with asthma will benefit by reducing particulates in the air.
- Development of smaller, locally based facilities (more than ethanol or biodiesel), like switchgrass based electric generating plants. Grants and a more friendly Purchase Power Agreement and the ability for community based or cooperative based groups to sell electricity is needed.
- Promote alternative energy sources, not just alternative fuels, as well as the conservation of petroleum type fuels.
- Produce more alternative renewable energy sources for transportation and home heating and cooling.

What do you think needs to be done in Michigan to promote the use of vehicles that utilize alternative fuels?

Incentives/Disincentives

- The price of alternative fuel vehicles has to be much lower to compensate for the lower efficiencies in fuel economy.
- Raise the tax on gasoline.
- Give special consideration for using alternative fueled vehicles—lower registration fees, special parking privileges, etc.
- Consider a tax reduction for those who use alternative fuels in any form.
- Incentives to buy cars that are adapted to alternative fuels (including hybrid, E85, clean/bio diesel vehicles).

- Incentives/subsidies for a short time to get gas stations and companies into the market.
- Provide free food coupons to people who buy alternative fuels, along with information on climate change.
- Give gas station owners tax incentives to sell alternative fuels.

Feedstocks Fuel Production

- Promote the use by offering tax incentives or grants and low interest loans for farmers to produce the commodities needed to manufacture "green crops" for fuel production.
- Increase the efficiency of production so the costs will come down and the savings can be passed along to consumers at the pump.
- Consider the impacts to the local communities where alternative fuels are processed. If the processing plants are a nuisance or health risk, that needs to be addressed.
- Legalize the growing of hemp, and make it law that unused agricultural land must be converted to hemp propagation.

Distribution/Infrastructure

- Federal: require that the post office use alternative fuels and allow the infrastructure (i.e., pumps) at the post office to be made available to the public.
- A no-interest loan program for gas station owners to convert their pumps would help.

Vehicle Production

- Increase supply and availability.
- Automakers need to manufacturer vehicles in every price range that are able to use alternative fuels. Every price range needs to be covered for hybrid vehicles, as well.
- Use these alternative fuels to run light rail and bus systems.

Marketing/Education

- Educate consumers on which vehicles are already "green fuel" capable so they can make the choice to switch over to that resource. Provide assurances and information for consumers on vehicles that can utilize the new fuels. If engines are adaptable, tell how to adapt them.
- Develop a state-sponsored marketing program for increased use of diesel vehicles.
- Demonstrate that there is a significant net reduction in the use of fossil fuels from the adoption of alternative fuels and that there is negligible impact on food and feed production.

What are the current barriers (regulatory or otherwise) to renewable fuel innovation in Michigan?

Economics

- Inexpensive gasoline; subsidies to fossil fuel producers that make them cheaper to produce
- Oil company profits

- Capital - loans, funding, financial backing
- Profit uncertainty

Feedstocks/Fuel Production

- Uncertainty as to which biomass will be used for fuels in the long term. Each may require different equipment to grow, harvest and transport. A farmer investing in equipment needs certainty.
- The biggest barrier is fuel production.
- Michigan needs crushing operations in order to contain feedstock costs, but we need to determine what to do with the soybean meal. Start funding the International Market Development Grant Program to help producers develop products and markets for this influx of soymeal.
- Expensive equipment is needed. Producers need used machinery and equipment maintenance (spare parts, maintenance personnel); start a pool of used equipment and develop incentives for retailers and/or local elevators to be a resource for used equipment and parts (e.g. parking lot space for used equipment trade).
- Farmers need an affordable labor source that can tolerate short-notice, modest wages, short duration, and heavy work. Create a "farmer job bank"—some way to connect those who would be willing to help out on a weekend, off-hours, or if they are not working at the time the farmer needs assistance.
- Legalize hemp production.

Distribution/ Infrastructure

- Lack of availability of the fuels.
- Expensive distribution (distance, equipment)

Fuel Utilization/Energy Efficiency

- Low utilization of renewable fuels
- Low estimates or even loss of the energy efficiency in replacing fossil fuels with alternative fuels
- American auto manufacturers primarily offer alternative fuel or hybrid vehicles that are large, fuel inefficient vehicles; should offer small alternative fuel or diesel vehicles.

Other

- Lack of vision and political will
- Communities are worried what a large windmill in their area will do to safety and land value. Communication can ease this concern by shown what has happen in other towns that have gotten large windmills.
- Private development could be increased by passing legislation that states very specifically what price people will be paid for wind power, solar power, etc. The Netherlands passed a simple law like this that led to huge increases in renewable energy production.
- Purchase power agreements

- Land use issues are a barrier to wind energy.

Please identify any places (states, companies, regions, etc.) that are models for alternative fuel innovation and/or people that are experts in the field.

Model States

- Iowa (Chariton Valley)
- California - hybrid vehicle have access to high occupancy vehicle lanes

Model Countries

- Sweden is a good example
- Michigan needs to model the ethanol production in South America and other places and possibly partner with them to import the feedstocks produced in warm climate regions of the world to provide for supply stability.
- Netherlands
- Germany and Austria for Bio-diesel utilization
- Europe
- Canada (Errol Caldwell)

Other Resources

- Professor Andrew Frank, University of California Davis, plug-in hybrid electric vehicle research
- *www.greasecar.com*
- *www.veggistroke.com*
- There are none today, as all alternative fuels programs are currently subsidized because of the low efficiencies of the processes.
- Sugar processors and elevators have years of experience accepting and processing materials from local farmers. The farmers in mid and upper Michigan are familiar with issues such as transportation, distribution, equipment, cost.
- American Electric Vehicle company in Ferndale just introduced the "Kurrent," a sporty Italian designed two-seater.

PUBLIC COMMENTS: DECEMBER 19, 2006—FEBRUARY 21, 2007

The Michigan Renewable Fuels Commission used a variety of means to solicit public comment, including public comment opportunities at the end of the commission meetings, online comments through the commission website (*www.renewablefuelscommission.org*), and submission of written and e-mail comments.

Since October 2006, three people have spoken during the public comment period at the end of the commission meetings and 22 online and 10 written and e-mail comments were received.

The public comments received from December 19, 2006 to February 21, 2007 were compiled and summarized by Public Sector Consultants and the main points are included below.

Public Comment Period (January 11, 2007)

Two people from the audience wished to comment. Their comments can be categorized as follows:

Infrastructure

- Discussed the Michigan Department of Labor and Economic Growth program available to Michigan public service stations which offers financial incentives to install or convert fuel delivery systems for E85 and B20 fuel (see attached).
- Presented a map of public renewable refueling stations; there are 33 E85 and 31 B20 sites (see attached).

Education and Incentives

- Education on renewable fuels is essential and there is a need for additional funding for incentives.

Goals and Objectives

- Questioned what the goal of the commission is—to reduce fossil fuel use and greenhouse gases, increase jobs, or something else?
- The commission should establish goals and timelines for meeting these goals.
- Need to develop a strategy for ensuring the state reaches its goal of 1,000 pumps.
- Encourage the focus on fundamental structural change.

Open-Ended Written/E-mail Comments

Three e-mails were received in this time frame. These comments are listed below.

- Noted the veto of HB 4647 for wind mill tax credits; questioned the administration's support for renewable fuels.
- Questioned whether there are any biodiesel stations in their area and why diesel costs more than gasoline.
- Would like to see research conducted on why people are not driving vehicles that utilize alternative fuels; would like alternative viewpoints and facts on the production history of electric vehicles.

Online Public Comments

Four people submitted public comments via the website during this time frame. They responded to the questions below.

What do you think needs to be done in Michigan to promote the development and use of alternative fuels in Michigan?

- Develop ethanol and biodiesel processing plants in Huron County and northern Sanilac and Tuscola counties. This area has a long history of excellent agricultural

production, a deep-water port in Harbor Beach, and a workforce that is very willing and able to work. Detroit Edison has a "leveling" power plant and a deep water port that could be utilized.

- The byproduct of ethanol production, distiller's grain, will be in high demand in Asia. The ocean-going ships could be utilized to transport it.
- Create a vision that would mandate 100 percent alternative fuels use for marine activity to protect our Great Lakes.
- Consumers must be able to purchase equipment such as boats, generators, and vehicles that operate on alternative fuels. Therefore, manufacturers must be motivated to develop these products.
- Hold local or regional discussions to identify ways the state can get involved, either by owning facilities, labs, etc., or by purchasing obsolete distilleries and refineries, crushing facilities, tanks, and processing equipment that could easily be converted to produce either ethanol or biodiesel.
- Michigan needs to devote itself to the production of agricultural products better geared toward renewable fuel production.
- Entice the Grease Car Company to relocate in Michigan. It is cutting edge and would solidify Michigan as an innovation state!

What do you think needs to be done in Michigan to promote the use of vehicles that utilize alternative fuels?

- Enact a non-agricultural, fuel-based tax to curtail consumption of petroleum-based fuel. Diesels are 30 percent more efficient and even more so with propane boost. When people see the reduction of cost, pollution, and capital flow to the Middle East to import fuel, they will see it makes sense to keep our farmers busy producing fuels. Tax every car that can't run on biofuels and assist companies that are in the biofuels industry.
- Education is obviously critical to change the mindset that we must use petroleum-based fuel. It's time to challenge our future engineers and auto designers with stiffer requirements.
- Diesel Hybrids, Piezo Injectors, Bluetec.

What are the current barriers (regulatory or otherwise) to renewable fuel innovation in Michigan?

- Get EPA to approve vegetable oil as a fuel source.
- Need some kind of fuel standards lab that would test all the fuel that's put to market. Other states have really bungled mandating alternative fuels that are sub-standard, which has made consumers fearful of trying alternative fuels.
- Streamlining the tax breaks, credits, and forms is useful and not prohibitively complex.
- The auto manufacturers need to listen to what people want and be responsible to the public for creating a healthier environment. Status quo has to go.

Please identify any places (states, companies, regions, etc.) that are models for alternative fuel innovation and/or people that are experts in the field.

Other Resources

- *www.greasecar.com*
- Scott Alf, Ann Arbor educator and ecologist
- Jim Croce of the NextEnergy Company
- John Bolz

PUBLIC COMMENTS: FEBRUARY 22, 2007—MAY 14, 2007

The Michigan Renewable Fuels Commission used a variety of means to solicit public comment, including public comment opportunities at the end of the commission meetings, online comments through the commission website (*www.renewablefuelscommission.org*), and submission of written and e-mail comments.

Since October 2006, five different people have spoken during the public comment period at the end of the commission meetings and 24 online and 13 written and e-mail comments were received.

The public comments received from February 21, 2007, to May 14, 2007, were compiled and summarized by Public Sector Consultants and the main points are included below.

Public Comment Periods

Two members of the public wished to offer public testimony at the February 26, 2007, meeting of the full commission. Following is the summary of their comments:

- Encouraged by support from federal and state government, the automobile industry, and the public for the expansion of renewable fuels.
- Concerns over the proposed ethanol plants—the capacity of ethanol plants is going to use up all of Michigan's corn, we would need to increase corn acreage by 25 percent to meet both livestock and ethanol demands. This may reduce acreages of other crops, mainly soybeans. Nationally, this is much the same.
- Has economic projections that predict the prices in the corn and livestock markets could be set by oil prices.
- Concerns on the future of biodiesel—the price of soybean oil is making it too costly to use and supplies of alternative feedstocks are limited.
- Suggested funding research to look at the opportunity to extract corn oil from distillers dried grain (DDG), which is a coproduct of corn-based ethanol production ($100/ton or 5 cents/lb.). If you can pull out oil from DDG, it would be more cost effective. Also would recommend state incentives for constructing facilities to extract corn oil from DDG.
- Questioned what the pathway is to reach a goal of using 10 percent biofuels in the next seven years.

One person chose to give public testimony at the commission meeting on March 28, 2007. The following summarize this testimony:

- Discussed the Michigan Department of Labor and Economic Growth (DLEG) program available to Michigan public service stations, which offers financial incentives to install or convert fuel delivery systems for E85 and B20 fuel.
- Stated that the state's infrastructure is expanding and the average incentive available to service stations is $9,000; most are putting in new dispensers and tank storage. DLEG tracks these stations to ensure they carry the alternative fuels for at least three years.
- Presented a map of public renewable refueling stations; there are 47 E85 and 35 B20 sites as of March 28, 2007 (see attached map).

One person gave public input at the Feedstocks and Fuel Production work group meeting on May 3, 2007.

- Cautioned the use of the terms "joint venture" or "equity participation" in recommendation regarding oil and gas development. It could cost the state considerable money.

Open-Ended Written/E-mail Comments

Three e-mailed comments were received during this time. These comments are summarized below.

- Specifically interested in the use of vegetable oils for biofuels; this seems to be the most simple, the least expensive and the cleanest fuel for the environment to make and burn in engines. Vegetable oil can already be adapted for use in diesel vehicles and machines and it will not rot rubber fuel lines like biodiesel. If vegetable oil is used, perhaps there will be a decline in using it for fried foods and thus reduce obesity. If we only have a corn-based approach, there is the potential to see a decrease in livestock production (high-quality calorie food) if the price of corn feed increases.
- Offered information about Minnesota's proposed alternative fuel state policy to eliminate exclusivity contracts and research being conducted on the use of E85 conversion kits (*http://www.governor.state.mn.us/mediacenter/pressreleases/2006/august/PROD007738.html*). Indicated desire to make Michigan the leader in this field, including ethanol development, other transportation fuels, and non-fossil fuels for home heating and air conditioning.
- Developed an outline of a proposal to use state and local government-owned property to plant, harvest, and process the vegetation into biofuels and develop a co-op program for local units of government, farmers, landowners, and companies. Proposed developing financial incentives (tax breaks) for feedstock producers and allowing them to sell their product directly to the co-op. Local units of government (cities and counties) should work together to develop local biomass companies. Animal wastes could also be used in the process and residues from the process could be used as fertilizer.

Online Public Comments

Two people submitted public comments via the website during this period of time. They responded to the questions below.

What do you think needs to be done in Michigan to promote the development and use of alternative fuels in Michigan?

- If Michigan wants to get serious about being a leader in alternative fuels, they need to be able to fund the effort.
- Help stations convert to these fuels and not just a token of help, real help so they can turn a profit.
- More research on feedstocks, i.e., Algae, Grass, etc.
- Add a non-renewable fuel tax on every gallon sold in the state. With the fluctuation of gas prices lately and the proof that people will pay whatever it takes, adding 15 or 30 cents per gallon would not slow sales. This revenue could be divided between infrastructure, research, education, and promotion. This would also give the biofuels an edge on making it cost effective to run the fuel.
- Develop a net metering statute that mandates buyback by the utilities at a 50% rate of retail pricing of all annual excess generated. Or develop a tariff system as is used in other countries to stimulate distributed generation. The reason being that to install a small wind plant it is more cost effective to install a 10KW than a 3KW. Yet one can only "save" what would normally be used, which is not viable financially.

What do you think needs to be done in Michigan to promote the use of vehicles that utilize alternative fuels?

- Price conventional fuels higher or create financial incentives to switch.

What are the current barriers (regulatory or otherwise) to renewable fuel innovation in Michigan?

- Current net-metering is a disincentive.

Please identify any places (states, companies, regions, etc.) that are models for alternative fuel innovation and/or people that are experts in the field.

Other Resources

- Recently attended the Agri-Energy Conference. From what was explained, liked the idea of cooperatives doing projects—distributed generation that allows the land owner to tie to the grid. Tariff models such as those used in Germany and Denmark should be serious options. The most essential component is that the small owner/generator/landowner should be able to financially participate.

Appendix E:
Work Group Assignment List

As each work group involved only a portion of the full commission, it was important to ensure they were balanced and represented diverse interests and expertise. Staff tried to make work group assignments based on these criteria and have done their best to accommodate commissioner's interests.

Feedstocks and Fuel Production

- K. Joel Berry
- Jim Byrum
- Steve Chester
- Jim Croce
- Jeffrey Ehlert
- Zoran Filipi
- Trevor Lauer
- Deb Morrissett
- Barry Mumby
- Bruce Noel
- Michael Petersen
- Steve Pueppke
- Dick Vande Vusse

Distribution and Infrastructure

- Charles Griffith
- Brian Horsford
- Mitch Irwin
- Susan Kuck
- Curtis Magleby
- Kim Mahrle
- Mary Beth Stanek
- Rose Wilson

Public Education and Marketing

- Steven Bertman
- Bruce Brownlee
- David Cole
- J. Peter Lark
- Peter Madden
- Kirk Mercer

Appendix F:
Compendium of Recommendations of the Michigan Renewable Fuels Commission

FEEDSTOCKS AND FUEL PRODUCTION RECOMMENDATIONS

1. The **Michigan Renewable Fuels Commission** should continue to function as a catalyst for research, provide coordination of renewable fuels activities and offer policy recommendations as needed, review the capacity to implement the ideas, and encourage collaboration between public and private interests.
2. Fund and develop a **Michigan Renewable Fuels Model** that can be used to evaluate the economic potential of various biorefinery/feedstock systems, including biorefinery technology availabilities and efficiencies, feedstock availabilities and capacities, supply chain requirements (transportation, related logistics, and buyer/supplier configurations), investment and employment impacts, carbon and other environmental impacts, and generation of competitively based returns at various price levels for system inputs and outputs. This model is essential to create an integrated approach to policy and economic development efforts that can optimize the state's business investments and develop a competitive and sustainable bioenergy economy.
3. Establish the **Next-Generation Renewable Fuels Feedstock Program** to encourage the sustainable production of next-generation bioenergy and biomass materials while reducing risk to landowners. The program should be linked to the development of prospective biomass customers, and shall include the following:
   a. Payments to landowners/operators that produce dedicated energy crops (payments awarded to projects that show the greatest promise in terms of sustainability)
   b. Tax incentives or loan guarantees for the purchase of new equipment required for energy crop establishment, harvest, transport, or storage
   c. Research on agronomic production systems for energy crops in Michigan and provision of educational materials and technical assistance for sustainable energy crop production
   d. Creation of a "nursery" of energy crops as a basis for a biotechnology- driven plant breeding program to enhance and improve energy crops and other biomass plants, as we know them today
4. Reserve a **minimum** of **six** Renaissance Zones that would encourage production facilities that utilize cellulosic materials for the production of renewable fuels.
5. Support the United States Department of Agriculture (USDA) **in giving landowners the option to remove *without penalty* lands that are not highly environmentally sensitive from various USDA conservation programs** (especially the Conservation Reserve Program) and return them to crop

production, including energy crops. We urge the Secretary of Agriculture to revisit the decision made earlier this year disallowing such flexibility.[7]

6. State actions to promote renewable fuels and their production facilities in Michigan should be **feedstock neutral** to available fuels (liquid and gaseous fuels), conversion technologies, and multiple renewable feedstocks. Preference should be given to Michigan-grown feedstocks. Michigan must embrace and provide incentives to promote existing and new facilities that utilize bioenergy crops, including, but not limited to the following: pyrolysis and gasification, process heat and co-generation, biomass burning stoves, direct combustion, cellulosic ethanol, advanced biodiesel, biobutanol, hydrogen fuels, and co-gasification with various biomass feedstocks utilizing integrated gasification-combined cycle.

7. **Consolidate** renewable fuels-related promotion and economic development efforts in various state departments within a single agency.

8. Promote the "**one-stop shop**," including the Ombudsman Office, in the Michigan Economic Development Corporation (MEDC) to streamline and expedite regulatory, technical, and financial assistance (e.g., permitting process and grants for new and expanded plants clarified and expedited) for renewable fuel project developers.

9. Develop a **state/private match program** for federal grants that promotes feedstocks and production of renewable fuels, including, but not limited to, restoring the dedicated funding of the Forest Financing Authority within the 21st Century Jobs Fund to be used for renewable fuels initiatives.

10. **Provide incentives to developers of early-stage technology projects and processing centers** (e.g., zero-percent loans, loan guarantees, incentives, grants) through the following actions:
    a. Establish a **$50 million package** within the 21st Century Jobs Fund for next-generation renewable fuel projects over two years **and another $150 million** over the following three years. Priority will be given to projects that utilize Michigan-based raw materials, goods, and services.

    b. **Explore and/or develop new funding mechanisms** and sources of revenue to support next-generation renewable fuel projects including, but not limited to, the following:
       - Federal grants, including the Department of Energy grant to support the development of small-scale cellulosic biorefineries in Michigan[8]
       - The ability to develop, use, and/or monetize state-owned oil, gas, and forest reserves, exclusive of the constitutionally protected royalties and severance taxes, and dedicate these new funds solely to foster renewable fuels and alternative energy technology and innovations to reduce reliance on energy imports in partnership with private industry

[7] Voting record on this recommendation was 11–9.
[8] View grant opportunity synopsis at *http://www.grants.gov/search/search.do?oppId=13741&mode=VIEW*

- Other revenue-generating mechanisms, such as earmarking a portion of any potential increase in taxes.

c. Consider as a future strategy the **development of a Request for Proposals** in a competitive process to allocate funding to private/public partnerships using project categories and selection criteria outlined in Appendix H.

d. The state should provide leverage resources with federal and local resources to **establish Regional Biomass Processing Centers** through a major research university that has matching funds, in conjunction with the development of prospective biomass customers.

11. Preserve and dedicate a portion of the **21st Century Jobs Fund** for applied research and development of renewable fuel production and utilization technology.

12. Create incentives to improve the **technology transfer process** to encourage the commercialization of promising technology discoveries from Michigan institutions and universities, in order to maximize jobs and investments in Michigan.

13. The MEDC shall **identify, publish, and market an inventory of prime sites for co-location of new renewable fuel plants** with existing facilities, such as pulp mills, industrial facilities, power plants, food processing plants, etc.

14. Encourage **technology and process improvements** of existing renewable fuel production facilities to promote long-term sustainability.

DISTRIBUTION AND INFRASTRUCTURE RECOMMENDATIONS

15. **Continuing Michigan's Commitment**. Public Act 274 of 2006, creating a service station matching grant program for renewable fuels infrastructure, is scheduled to sunset in September of 2007. Through a modest expenditure, the act has assisted retailers in building the pumps and infrastructure necessary to provide biofuels to the state's consumers. A total of 17 stations in 14 counties have been provided assistance. The program should be amended as follows:

    a. **Initiate another round of grants**. The new grant cycle should total $7 million for the installation of pumps and infrastructure at the retail level.

    b. **Increase the maximum grant** amount from $12,000 to $20,000.

    c. **Eliminate the present requirement that no more than 15 percent of the total fund can be spent in any one county or granted to any one company.** Instead, the legislature should adopt language that provides that no more than 30 percent of total expenditures can be spent in any one county, and that no more than 50 percent of total grant funds can go to any one company.

E85

16. Any future **economic development incentives** provided by the Michigan Department of Labor and Economic Growth for the development of new ethanol

production facilities should contractually obligate the recipient of such grants by requiring them to show proof of good faith to offer such products to Michigan retailers/distributors before any development incentives are paid. Such good faith offers will be at a fair market value.

17. **Motor fuel franchise dealers or distributors should be allowed to obtain biofuels from a supplier other than a franchise distributor.** Michigan law should provide that any franchise which prohibits or discourages a dealer from purchasing or selling E85 from a firm or individual other than the distributor is null and void as it pertains to that fuel if the distributor does not supply or offer to supply the dealer with E85 fuel. Distributors that violate the law by entering into exclusivity contracts should be subject to a fine.

18. An Underwriters' Laboratories (UL) standard for E85 pumps and infrastructure is being researched by UL and its stakeholders. Although there have not been any E85 pump failures in either Michigan or the nation, a standard is urgently needed now. Until such a UL standard is developed, the RFC recommends that the governor work with the State Fire Marshall Office and the Michigan Congressional Delegation to **have Congress adopt a federal "safe harbor" provision for retail marketers desiring to install and operate E85 pumps.**[9]

Biodiesel

19. In order to promote the use of B20 biodiesel in Michigan, a national American Society for Testing and Materials (ASTM) standard for B20 needs to be developed and approved. Such a step will resolve warranty issues for users of the fuel. In the interim, while such a national standard is being developed, **the Michigan Department of Agriculture should promulgate rules to adopt an interim standard for B20.** Such a standard should be based upon the standard currently in use by the Engine Manufacturers Association (EMA).

20. The legislature should **appropriate to the Michigan Department of Agriculture sufficient funds to meet the mandates of P.A. 44 of 1984** (Motor Fuels Quality Act), which requires inspection of diesel and biodiesel fuel in Michigan.

21. **Motor fuel franchise dealers and distributors should be permitted to obtain biofuels from a supplier other than a franchise distributor.** Michigan law should provide that any franchise which prohibits or discourages a dealer from purchasing or selling biodiesels from a firm or individual other than the distributor is null and void as it pertains to that fuel if the distributor does not supply or offer to supply the dealer with any biodiesels. Distributors that violate the law by entering into exclusivity contracts should be subject to a fine.

Green Retailers

22. The state should **establish a "Green Retailers" program** that rewards retail and wholesale outlets that attain benchmarks in the sale of biofuels. Such a step would provide state recognition for achievement and provide important cost-savings to both the seller and the consumer of biofuels. To provide alternative fuel choice to consumers, promote state energy security needs and reduce greenhouse gas

[9] Voting record for this recommendation was 13–6.

emissions, a goal of achieving a minimum of 10 percent alternative fuel use in the transportation sector by 2012 is a critical first step. Access to alternative fuels should address both gasoline and diesel fuels. To achieve the goal of 10 percent alternative fuel use in gasoline transportation fuels, a Green Retailer designation would be provided by the state to any retail outlet that sells a minimum level of gasoline biofuel (E85).

23. A Green Retailer will **receive incentives to support the infrastructure development needs for E85** and to help ensure that the retailer is able to provide value-based pricing (ethanol's lower energy content requires a lower price per gallon to offset the fuel economy reduction) for sustainable consumer use. The applicable incentive will be a reduction in the payment of motor fuel tax on all gasoline sold at the facility. These incentives are needed in the early stages of E85 growth to accelerate the development of new production, distribution, and retail channels. The Green Retailer designation and incentives should reflect a growing use of renewable fuels as outlined below:

E85 Sales	Reduction in Motor Fuel Tax	Date
2%	1 cent	Thru 2010
5%	2 cents	Thru 2010
5%	1 cent	2011–2012
10%	2 cents	2011–2012

24. **The same incentives should apply to diesel transportation fuels,** as long as a retailer meets the requirements of a Green Retailer for E85. A Green Retailer designation would apply for similar minimum levels of B20 biofuel sales. The reduction in motor fuel tax would apply to the amount of diesel fuel sales at the facility.

25. As an alternative to the application of incentives to the Green Retailer described above, **a feebate[10] approach could be considered where increases to the motor fuel tax (fee) are used to create a fund that would provide Green Retailers with an incentive (rebate) amount for each gallon of E85 or B20 sold.** Such a public/private partnership is critically needed to accelerate consumer access to alternative fuels and support consumer value, setting the stage for increased use of renewable fuels in the transportation sector beyond low-level blends. The amount of the fee (per gallon of gas sold) could initially start at 0.01/gallon and should be increased as needed to achieve a goal of 10 percent alternative fuel sales by 2012. The amount of the fee and the amount of the rebate should be reviewed on an annual basis by the RFC.

Low-Carbon Fuels

26. **The governor should initiate the development of a strategy to enact a low-carbon emission transportation fuels program in Michigan.** Such a program should review the regulatory and legal mechanisms needed to enact a low-carbon fuels approach in Michigan. The strategy should identify mechanisms that will

[10] A government program designed to encourage the use of renewable fuels by increasing the fee on gasoline and offering a rebate on renewable fuels. [Blend of fee and rebate.]

result in Michigan achieving 25 percent use of renewable fuels by 2025. This strategy should be integrated into and be consistent with an overall carbon reduction strategy for the state.

PUBLIC EDUCATION AND MARKETING RECOMMENDATIONS

Lead by Example

27. **Coordinating and implementing the state's role**. The governor should advance the vision, goals, and recommendations of this report by identifying one agency/entity/staff person to coordinate renewable fuel-related interagency decisions, establish appropriate mechanisms for stakeholder input, secure federal funds to advance the recommendations of this report, and manage the information clearinghouse and statewide marketing campaign (see related recommendations below).
28. **Renewable fuel use**. The state should continue to use renewable transportation fuels whenever practical and cost-effective and partner with public and private entities to foster the availability of these fuels for all state department users of automotive fuel.
29. **RFV procurement preference**. In determining the winning bidder for state contracts involving the use of motor vehicles, the Michigan Department of Management and Budget should continue to give preference to RFVs whenever practical, with or without a federal mandate.
30. **Renewable fuels use and promotion**. The Department of Management and Budget should continue to administer the state's flexible fuel fleet awareness program, which is designed to facilitate the use of renewable transportation fuels in the state's fleet. To date, the plan has ensured that
    - all RFVs in the state's fleet are identifiable;
    - state employees driving RFVs are aware of nearby stations offering renewable fuel; and
    - state employees are encouraged to use renewable fuels when operating RFVs and diesel-powered vehicles in the fleet, whenever practical and cost-effective.

Develop a Statewide Marketing Campaign

31. While the specific strategy for a **statewide marketing campaign** should be left to marketing professionals, the RFC suggests the following audience, objectives, messages, and tactics.

Audience (in order of priority)

- End-users (including children)
- Distributors/station owners/mechanics
- Fleet managers
- State and local government/schools

Objectives

- Educate consumers on options, costs, challenges, and environmental benefits as described in Chapter 2.
- Encourage use of renewable transportation fuels and the vehicles that use them.
- Cultivate and maintain Michigan's image as a renewable energy leader.

Messages

- Renewable transportation fuels are a good choice because they decrease dependence on foreign imports while stimulating economic growth domestically, promote sustainability of resources, and reduce emissions and their environmental impact.
- Renewable fuels are increasingly accessible.
- Everyone should become informed and be encouraged to participate (see Audience above).

Tactics

The marketing campaign should include the following tactics/activities.

32. Develop a **recognition program,** such as the Green Retailers program recommended in Chapter 5 (Distribution and Infrastructure), that rewards and provides additional marketing opportunities for fleets, fuel retailers, and auto dealers in Michigan that have/sell a significant number of RFVs, use/provide clean, American-produced fuels, and educate their customers.
33. Encourage more cities to participate in the **Clean Cities Coalition**, which provides technical, policy, and program information about RFVs.
34. Create a **Flexible Technical (Flex-Tech) Assistance Program** to provide assistance to fleet managers who want to evaluate the feasibility and cost of adding RFVs and refueling facilities to their operations. Services could include low-cost training for vehicle mechanics through certified institutions and testimonials from fleet managers who have used renewable transportation fuels.
35. Play a leadership role in **educating K–12 students** about the benefits, challenges, and opportunities of renewable transportation fuels and the vehicles that use them.
36. **Develop and promote a clearinghouse for information** regarding renewable fuel vehicles and renewable transportation fuels. This information should be available on the Web and include fact sheets on the economic impact of renewable transportation fuels, the environmental impact of fuel production and use, reliability of the fuels, challenges, etc.
37. Make available an **RFV license plate or decal** for RFV owners to display.
38. To **increase the visibility of RFVs** as well as the public's comfort level with these vehicles, the state should
    a. **create partnerships** with auto manufacturers and suppliers, energy companies, technology providers, producers, etc. to assist in promotion activities,

b. create "brand" identification for retail outlets that provide renewable fuels and secure placement on Michigan Department of Transportation administered **Logo Signs**, and
c. work with private companies to add renewable fuel retail outlets to the database that drives **in-vehicle navigation systems**.

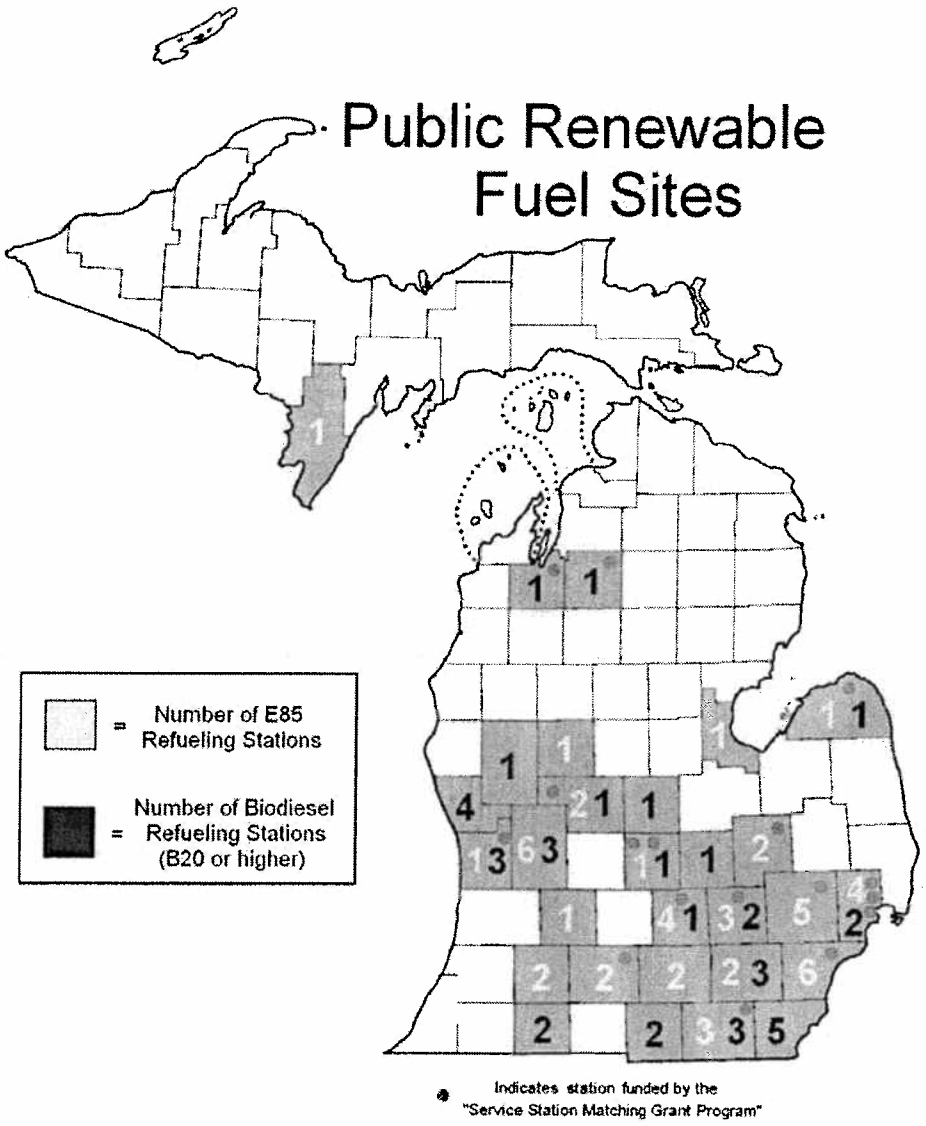
Create Incentives

39. **Renewable Fuel Revolving Fund**. Explore the state's ability to use revenue generated from the sale of Energy Policy Act credits, combined with any revenue generated as a result of the recommendations in this report, to establish a Renewable Fuel Revolving Fund. The fund would be used to support these recommendations and further educate, promote, and encourage the use of renewable fuel as well as the vehicles that use them.
40. **Renewable Fuel Vehicle Sales Tax**. The state should consider tax policies that encourage the purchase of RFVs through sales tax reductions or a decrease in the annual vehicle registration fee for an RFV.
41. **Renewable Fuel Tax Refund for Commercial and Fleet Users**. The state should consider incentives for operating a fleet that uses a renewable fuel.
42. **School Bus Grants**. The state should vigorously promote and encourage the use of incentives, such as grants and incentives provided through the U.S. Environmental Protection Agency's Clean School Bus USA program. The grant could also aid in promotion of renewable fuels by allowing relevant labels to be placed on the buses.[11]

[11] This would require amending the Pupil Transportation Act 187 of 1990, MCLA 257.1833(1)(h), which currently prohibits any insignia, advertisements, stickers, or markings on a school bus other than specified by statute.

Appendix G:
Map of Public Renewable Fuel Sites

For specific locations and the most up-to-date information on public renewable fuel sites, visit *www.e85fuel.com* (ethanol) or *www.biodiesel.org* (biodiesel).



ENERGY OFFICE, OTTAWA BUILDING 4th FLOOR
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www.michigan.gov/energy office • (517) 241-6228

Last revised 5/22/2007

Appendix H:
Draft Outline for RFP

REQUEST FOR PROPOSALS FOR FIVE MODEL RENEWABLE FUEL FACILITIES FOR MICHIGAN

Outline of Discussion Issues

Objective: To create five Michigan pilot or commercial scale facilities that will advance the state's infrastructure, production capabilities, and national leadership in renewable fuels.

Program Description: This Request for Proposal (RFP) is designed to contribute to the funding of up to five facilities that will advance Michigan's position as a leader in the renewable fuels industry. The preference is to fund actual facilities although extensive, ready-to-implement feasibility studies for cutting edge facilities will be considered. Given the maximum amount of funding available per project, it is anticipated that the funding provided through this RFP will need to be substantially supplemented with private investment or other sources of funding.

Eligibility: Funding will be made available to private/public partnerships made up of private firms, industry groups, investors, Michigan institutions of higher education, and local/regional public entities.

Amount of Funding: Total funds available: $50 million. Individual project maximum: $10 million

Project Categories: The five successful projects will collectively create a broad portfolio of model facilities for the state of Michigan. Facilities may propose biological or gasification conversion processes. Ideally, one successful project would be funded in each of the five categories listed. The selection committee reserves the right to select multiple projects in one or more categories (or no projects in one or more categories) based on overall proposal merit. The categories are:

1. Model next generation enhancements to existing corn ethanol facilities, e.g., fractionation technology, alternative energy to fuel facility, byproduct utilization.
2. Model next generation biorefinery utilizing corn and cellulosic feedstocks
3. Model next generation biorefinery utilizing cellulosic feedstocks
4. Model next generation biorefinery utilizing advanced strategies for feedstock acquisition (supply chain management)
5. Model next generation biorefinery utilizing advanced strategies for novel byproduct production and marketing

Other possible categories to add to, blend with or substitute for the above list:

6. *Model next generation biorefinery with explicit consideration of minimizing full life cycle costs, environmental impacts, and social impacts (e.g., fuel, feed, and food competition)*
7. *Model next generation biorefinery within an "energy park" configuration including electrical and other power generation.*

Project Selection Criteria: Projects will be judged using the following selection criteria:

1. Project directly or with high probability leads to a "serial number one" production facility
2. Technical merit and feasibility
3. Proving cutting-edge technology, preferably with Michigan-based intellectual property
4. Leveraging of other funding, e.g., private investment funds, federal contracts and grants.
5. Qualification of project team, including team composition that represents an appropriate private/public partnership.
6. Development of novel byproducts and their markets
7. Development of novel and complete supply chains
8. Utilization of unique advantages of a Michigan location
9. Positioning Michigan for national leadership in the bioeconomy