

CCI-10. Enhance and Encourage Economic Growth and Job Creation Opportunities through Climate Change Mitigation

Policy Description

Michigan's response to climate change can serve as a catalyst for increasing economic activity, in addition to reducing greenhouse gas (GHG) emissions. Michigan is already home to two of the world's leading solar power manufacturers, and over twenty-five businesses provide components for the growing commercial wind energy industry. Investors in the clean tech sector are constantly seeking locations that offer the most advantageous markets. Texas, Colorado, New York and Pennsylvania have recently added thousands of green collar jobs by offering start up capital, tax breaks and energy policy that welcomes clean energy. Michigan has a capable workforce, engineering expertise and substantial manufacturing capacity. It also possesses considerable natural resources that could establish it as a leader in renewable energy. Given the intense competition from other states and nations, however, additional incentives and support of government policies will be necessary to maximize investment in Michigan.

Policy Design

Members of the Michigan Climate Action Council recommend the state implement robust measures to retain existing clean tech business and attract new investment. The Council also recommends tapping the Michigan Congressional Delegation for assistance in securing more Federal money for training, research and development.

Goals:

• Provide More Attractive Financial Incentives

Broad-ranging incentive programs might include financial inducements for reactivating underutilized manufacturing space, using renewable energy bonds to leverage more Federal dollars for start up capital, tax breaks like the Emerging Energy Technology Development Credit, guaranteed loan programs for green energy development and assistance for worker training programs. The details for these and other incentives are offered in the implementation portion.

Motivators are also needed to encourage partnerships between green energy companies and more traditional (or retooled) manufacturers. For example, our state's solar panel manufacturers could partner with auto manufacturers to create solar recharge kits to be sold at a discount with the purchase of a plug-in hybrid vehicle. Municipalities could partner with renewable energy manufacturers to create green parking garages where plug-in vehicles can be recharged while at work. It is extremely important that plug-in hybrids not only be seen as a "vehicle" for reducing our energy dependence, but that they can be operated with lower GHG emissions. Similarly, incentives could be offered to utility companies that partner with on-site storage manufacturers to increase distributed on-site power. This on-site storage will help address intermittency issues as more wind and solar energy is fed into the grid. These options would all reduce money flowing from our economy to import carbon-based fuels and lead to job creation.

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Michigan can turn these challenges into economic growth and job creation opportunities. But to do so, the state must be willing to focus on protecting and building on our key assets, and encourage both the public and private sector to invest in new transformative mod... [1]

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• Implement Policies that Enhance and Encourage Economic Growth

Michigan can improve its competitive position and increase conservation and energy efficiency through policies that simplify grid connection for independent power providers, creates parity with leading states for net-metering and reward energy efficiency. These types of policies have helped other states attract investment in clean energy and reduce the outflow of capital for importing energy.

• Seek More Federal Support

- o Maximize federal funding from current and prospective sources (energy credit allowances) to train and employ low income/marginally employed people in conservation and energy efficiency projects, including older substandard housing;
- o Maximize federal funding to support job training at all levels and retool industrial facilities to expand opportunities in the clean energy industry
- o Continue to seek funding for advancing fuel cell research and development

• Utilizing Michigan's Existing Resources and Economic Opportunities

Based on input from local economic development organizations throughout Michigan, the major potential growth industries for Michigan's future were independently verified: cellulosic biomass, solar, wind, advanced energy storage, water. We need to make the point unequivocally that these industries surface from an objective process involving extensive input from local and state economic development groups in Michigan. Michigan needs to effectively match its resources, talents, and capabilities to what is known about the growth potential in clean technology industries. Michigan Economic Development Corporation (MEDC) Centers of Excellence are one example of how to effectively match up and take advantage of these resources.

• The state of Michigan is uniquely positioned for significant wind generation potential. The American Wind Energy Association (AWEA) has Michigan pegged at #14 in terms of wind potential and industrial capability (ranked #4) to manufacture, innovate, and utilize wind turbine products. It is one of the top ten states for investment and job creation potential for renewable energy development (ranked by investment according to the 2006 Renewable Energy Policy Project).

• The states hosts world class manufacturing environment featuring high quality and cost competitive manufacturing practices, integrated supply chains focused on innovation, and a work force that includes thousands upon thousands of skilled engineers, technicians, and manufacturing professionals.

• Michigan ranks second overall in total industrial research and development (R&D) spending and leads the nation in industrial R&D spending per gross state product.

• Further collaboration options exist in working with Michigan's automotive technology and manufacturing industry which has significant cross-over opportunities into the wind energy industry. More than 330 companies spend \$10.7 billion annually on R&D and employ more than 65,000 engineers, technicians, and scientists.

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- Michigan, centrally located around the Midwest manufacturing industry, is also the gateway to the Canadian Province of Ontario's strong manufacturing base and wind power developments.
- Opportunity to partner in efforts involving Michigan's 38,575 square miles of Great Lake's fresh water surface area which have an estimated offshore wind generation potential of 44,000MW.
- Collaboration and membership in the Consortium for Advanced Manufacturing of Alternative & Renewable Energy Technologies (CAMARET), a five university consortium formed to centralize manufacturing research expertise and resources necessary in the wind turbine industry including:
 - Understanding wind product designs and materials
 - Improving wind manufacturing processes, systems and facilities
 - Business and supply chain support
 - A state government that emphasizes renewable energy as a critical economic driver and aligns government departments to continuously support and improve our energy efficiency.
- Protect our water and maximizing its sustainable and affordable use for the benefit of all Michigan residents and the three traditional segments of our economy, while minimizing the threat of out-of-basin diversions. Michigan has as exceptionally rich—but not unlimited—source of fresh, clean water in the Great Lakes and our inland lakes and streams, and should focus investment on the activities and sustainable enterprises that this resource supports. For example, since climate change is contributing to lower lake levels and rising sea levels, mitigating climate change may help stabilize lake levels necessary for the Great Lakes tourism, sport and commercial fishing, shipping, and recreational boating industries to thrive.
- Investing in walk-able neighborhoods and transportation mode choices by using federal, state and local support to build a transportation infrastructure appropriate to an economy that is likely to have drastically higher energy costs. This should be accomplished with policies directed toward:
 - Creating transit and transit-oriented development opportunities targeting business attraction and neighborhood redevelopment. Lack of affordable, reliable, mass transit in our core communities is a major barrier to growing Michigan's 21st century economy. Mass transit in states like Oregon and Colorado have paid for itself many times over with new private sector development and investment along key transit corridors.
 - Supporting better planning and zoning for higher density and mixed use development (see Michigan Land Use Leadership Council Report 2004), that will result in lower costs of energy for housing and transportation, save tax dollars for water and sanitary sewer systems; and provide less costly access to services for people of all incomes.
 - Moving more cargo goods via rail and ship to reduce costly, dirty, energy-consumptive truck traffic, saving businesses and consumers' money and making substantial improvements in air quality and the health of individuals, especially those living in poverty.

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<#>Improve Michigan's competitive position and increase conservation and energy efficiency through policies such as the Renewable Portfolio Standard, Energy Efficiency, Integrated Resource Planning, and better energy codes. These types of policies will help attract investments in clean energy businesses, such as wind, solar, and high-tech batteries for hybrid and plug-in electric vehicles and on-site storage. Like¶ ... [8]

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o Reduce black soot emissions from diesel emitting mobile sources by creating programs to retrofit engines with diesel particulate filters.

- **Supporting a diverse agricultural base.** The Great Lakes region may incur relatively manageable impacts from climate change, since we are above sea level, close to water, and in a more moderate, northerly climate. Policies should
 - o Protect farmland, support crop diversification and farm viability, and improve access to fresh, Michigan-grown agricultural products, especially in underserved urban centers where people are forced to do their shopping in low-volume but expensive, convenience store-type markets. (See Michigan Food Policy Council Report 2006.)
 - o Support better planning and zoning to reduce development pressure on farmland and enable more sensible open space and working land protection. (See Michigan Land Use Leadership Council Report 2004);
 - o Reduce air and water pollution and provide habitat protection for better hunting, fishing and other recreational activities;
 - o Create incentives to promote re-forestation and a-forestation;
 - o Promote methane capture from agricultural and waste management activities as long as they do not increase air or water pollution.
 - o Encourage investments in net low carbon fuels and water conservation;
- **Maintaining traditional support for Michigan’s excellent public research universities**, which is strong but threatened. This should include support for clean energy research and educational initiatives at our universities and the development and promotion of these initiatives with support for their commercialization in Michigan from federal, state, nonprofit and foundation programs. We should also make full use of and encourage collaboration among all of our universities, community colleges and economic development organizations such as NextEnergy, Spark and The Right Place
- **Encouraging and facilitating Michigan’s strong social infrastructure** with its historic participation by diverse populations in educational institutions, labor unions, business organizations, tribal and local governments, religious communities, non-profits and charitable foundations.

Timing: As soon as possible.

Parties Involved: Universities, State agencies, Chambers of Commerce, energy utilities, existing green businesses/industries, energy conservation experts, and individual businesses across the state.

Other:

Implementation Mechanisms

Some of the key implementation mechanisms that will need to be further explored for this policy option are as follows:

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What Michigan has to offer to attract manufacturers of clean technologies

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<#> (strike the hyperbole) Michigan ranks second overall in total industrial research and development (R&D) spending and leads the United States in industrial R&D spending per gross state product.¶

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<#>Michigan, centrally located around the Midwest manufacturing industry, is also the gateway to the Canadian Province of Ontario’s strong manufacturing base and wind power developments.¶

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1. Multi-year extension of the federal production tax credit (PTC) for renewable energy: The Federal Production Tax Credit (PTC) has been a key component in the growth of domestic wind energy use since Congress created it as part of the country's energy policy in 1992. Unfortunately, the "on-again/off-again" status that has historically been associated with the PTC contributes to a boom-bust cycle of development that plagues the wind industry. By renewing the tax credit, Michigan can capitalize on creating jobs in the emerging renewable energy industry. Economic incentives will attract energy service providers.. Key implementation activities are as follows:

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- Michigan legislators should pass joint resolutions urging Congress to renew the PTC.
- Governor Granholm and our Michigan congressional delegation should urge Congress to renew the PTC.
- The Midwest Governor's Accord (MGA) should speak to state legislatures, members of the media and the American Wind Energy Association (AWEA) to address renewing the PTC.

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2. Expansion of federal Clean Renewable Energy Bonds (CREBS): As some key entities are unable to utilize the PTC effectively, other supplementary mechanisms such as federal renewable energy bonds should be made available to such entities in order to promote the development of renewable energy in their jurisdictions. This will involve efforts to clarify the benefits of these bonds with key congressional offices and staff. Similar to the PTC, this federal loan program is set to expire on 12/30/2008.

3. Promote coordination across states and assess policy mechanisms: Either the designated State lead agency for implementation of the MCAC recommendations, or the appropriate authorities should either investigate further or implement the following:

- Study the economic benefits of a renewable portfolio standard (aka renewable electricity standard), feed-in tariffs, rate making incentives and other financing options for increasing renewable energy in Michigan.
- Investigate and make recommendations about how subsidies/incentives for oil and gas could be transferred to renewables to increase development in the clean energy sector.
- Provide direct state financial incentives (grants, tax credits, loan guarantees and performance guarantees). Michigan should establish the same or complementary incentives to those in the Federal Energy Policy Act (EPAct) of 2005 to help reduce the financial cost of the overall project once engineering and cost studies are completed. Other options to be further explored could include:

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- o Alternative Energy & Energy Conservation Patent Exemption (Corporate) – An exemption from State personal income tax or business excise tax could be provided to an individual if the State approves a patent from any resident who has applied, or holds a patent for, an alternative energy or energy conservation system or device.
- o Renewable Energy Production Incentive - Michigan could offer a payment (for example 1.5 cents) per kilowatt-hour for electricity generated by hydro facilities and on-farm anaerobic manure methane digesters.

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- Examine the utilization of various pooled funds, such as securitization monies, bond and trust funds, pension funds, etc. for incentivizing alternative energy development and manufacturing in Michigan.
- A regional “turbine pool” should be created to simplify the process of obtaining wind turbines due to their demand-created, worldwide shortage. This would help to guarantee the market by ensuring their availability. Existing policy frameworks in the Midwest or Great Lakes region may be used as a model for similar State legislation. One option would be for Michigan legislators to coordinate the development of regional policy with other states to create a potential “turbine utility.”
- In coordination with the Michigan Economic Development Corporation’s SmartZones and Centers of Energy Excellence, and NextEnergy’s NextEnergy Zone, investigate the possible:
 - Creation of a Recycling Market Development Zone program similar to California’s. This combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. The California program provides loans, technical assistance, and product marketing to businesses located within these zones that use materials from the waste stream to manufacture their products. Eligible benefits could include: loans at below market, fixed rates, streamlined permitting and siting, technical and marketing assistance. Coordinated local government incentives could include a streamlined local permit processes, reduced taxes and licensing, and increased and consistent secondary material feedstock supply.
 - Another option is to further investigate the establishment of Foreign Trade Zones in Michigan. Such zones may benefit those clean technology manufacturers importing parts or products from overseas which allows for the deferral or elimination of import tariffs.
- Implementing a comprehensive, targeted marketing strategy would assist in the creation of an economic growth plan for alternative energy technologies. The Midwest should be marketed as a hub of clean energy within the United States and North America, to raise global awareness by creating a “brand image” to promote. We all stand to benefit, individually and as a region.
- The MEDC and DLEG should perform a workforce analysis of the education/job training needed for potential employees in the renewable energy and “green” jobs sector, along with infrastructure development and an inventory of existing capacity in the alternative energy sector. Similarly, identify opportunities for collaboration. These two training and workforce initiatives could include such options as:
 - Coordination of state/local workforce development & investment agencies to assist companies desiring to expand “green” technologies and alternative energy field operations and retain employment in Michigan. Upon request, these agencies could work with industry to recruit and assess candidates from the region’s major metropolitan areas and coordinate the activities of any of the service agencies or training institutions required to meet workforce needs.
 - Establishment of an Employment Training fund to provide up to a specified amount per employee for training in the “green” technologies and alternative energy field.

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Such a fund could be used to train Michigan's workforce in the new technology skills necessary for local businesses to successfully compete in the global economy, and specifically targets manufacturers and their suppliers.

- Investigate opportunities for business development based on manufacture of renewable energy component parts to include an inventory of potentially important component parts.
- Catalog current university research efforts and educational programs related to renewable energy.
- Catalog training programs available related to work force development programs.

Related Policies/Programs in Place

Renewable Portfolio Standard & Energy Efficiency Legislation: States that have adopted an RPS tend to attract renewable energy development and manufacturers in order to meet the demand growth of this sector. Governor Granholm is Michigan's leading proponent of legislation to mandate renewable portfolio standards and energy efficiency benchmarks for utilities. In April, the Michigan House of Representatives passed an RPS bill that mandates 10% renewables by 2015 and an energy efficiency standard that requires annual 1% efficiency reductions. The package had broad support from member of both political parties, as well as environmentalists, the major Michigan utilities, and business leaders. Integrated Resource Planning is necessary to weigh the economic and environmental costs of traditional energy generation against the benefits of renewable energy.

Centers of Energy Excellence: Governor Jennifer M. Granholm signed legislation on July 8, 2008 creating Centers of Energy Excellence, a program designed to bring companies, academic institutions, and the state together to create jobs in the alternative and advanced energy industry. The centers will partner university researchers on-site at innovative clean tech businesses to speed commercialization. The state will be able to provide matching grants up to \$45 million for Centers of Energy Excellence. The Michigan Economic Development Corporation (MEDC) has formed a number of "cluster teams" in a number of strategic industry sectors which Michigan is well suited to grow – cellulosic ethanol, wind turbine manufacturing, advanced battery design and manufacture, sustainable water technologies, and others. These cluster teams combine private sector, public sector, and academic experts and work to proactively seek out and attract new business models that have significant growth potential in Michigan. The first cluster team in advanced biofuels has already successfully attracted one of the world's first commercial scale cellulosic ethanol plants (using wood products) and a unique partnership with a Swedish company that turns wastewater sludge into biogas.

The MEDC-sponsored SmartZones provide distinct geographical locations where technology-based firms, entrepreneurs and researchers locate in close proximity to all of the community assets that assist in their endeavors. SmartZone technology clusters promote resource collaborations between universities, industry, research organizations, government and other community institutions, growing technology-based businesses and jobs. One of the twelve existing SmartZones is the Michigan Alternative and Renewable Energy Center (MAREC) - a self-sustaining distributive energy center that features a high-temperature molten carbonate fuel

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Accordingly, the following **Implementation Mechanisms** are (at this time) crude concepts to be "fleshed out" during the next week. Many of these concepts are redundant and/or overlap with Michigan's **Related Policies/Programs in Place** and will be modified and/or eliminated as options.

Financial Incentives:

Tax Breaks, Exemptions & Credits – Various State Examples

<#>Advanced Biofuels Tax Credit – an industrial recruitment incentive to provide a XX% credit for the cost of buildings, equipment, and intellectual property necessary to produce advanced biofuels (ethanol or methanol and/or their derivatives, produced from biomass – waste materials).

<#>Emerging Energy Technology Development Credit – an economic incentive to attract manufacturers of high-tech/high-growth energy technologies on the verge of full entry into the worldwide market. The intent is to provide { ... [11]

Comment [dh7]: Clean Water Action saw the 10% RPS as a good first step, but is committed to achieving a 25% RPS by 2025. Moreover, the House bill package was seen as needing essential improvements such as increasing interim standards to ensure immediate investment in renewable technology.

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cell, photovoltaic solar roof tiles, and nickel metal hydride battery energy storage system. The facility offers business incubator space, energy laboratory, conference center, and classroom facilities. Another is the **DTE Energy Hydrogen Technology Park in Southfield - a hydrogen energy demonstration project designed to provide insight into the role of hydrogen in our nation's energy system.**

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21st Century Job Fund: The \$2 billion 21st Century Jobs Fund uses securitized tobacco settlement proceeds to provide financing to help diversify and grow Michigan's high-tech economy by investing in basic research at the state's universities and non-profit research institutions, applied research, university technology transfer and the commercialization of products, processes and services in four targeted industry sectors, including alternative energy.

Anchor Company Tax Credits: In May 2008, Governor Granholm signed a package of bills to incent Michigan companies to join with the state in attracting other growing companies. The bills provide tax credits for anchor companies that attract or influence suppliers or customers to expand in Michigan. Michigan also recently passed an aggressive targeted tax cut to attract the next multi-billion expansion of Hemlock Semiconductor, the world's leading supplier of polycrystalline silicon, the primary component of photovoltaic solar panels.

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Green Jobs Worker Retraining Initiative: The state's workforce employment agency is about to launch one of the nation's most aggressive "Green Jobs" worker retraining programs, a \$6 million annual commitment, which will work closely with employers to retrain Michigan workers for actual job needs.

NextEnergy: NextEnergy is a nonprofit organization, founded in 2002, with the goal of advancing the alternative energy industry in Michigan. NextEnergy serves as a bridge between the public, private, and academic sectors to promote economic development in this sector. One of Next Energy's many tasks is to match local firms with outside clean tech companies and investors. For example, Next Energy has created an inventory of 35 wind turbine component part manufacturers and over 200 existing manufacturers that are interested in expanding into the turbine component space, and often coordinates matchmaking events with large wind turbine manufacturers. As an additional inducement, the Michigan Strategic Fund designated the NextEnergy Zone a Renaissance Zone in 2002. Businesses certified by the NextEnergy Authority that locate in the NextEnergy Zone to develop "alternative energy technologies," as defined by the Michigan Next Energy Authority Act, may claim tax benefits such as the Nonrefundable Business Activity Credit, the Alternative Energy Personal Property Tax Exemption and the Refundable Payroll Credit. The NextEnergy Zone is located in Detroit at Wayne State University Research and Technology Park. It is home to the NextEnergy Center, which includes laboratory facilities, business incubator space, and other facilities to support Michigan's alternative energy industry.

The Energy Office: This office, housed within the Michigan Department of Labor & Economic Growth, promotes energy efficiency and renewable energy resource development to Michigan's residents, businesses and public institutions. Program activities are designed to encourage the use of new technologies and alternative fuels in buildings, industrial processes, vehicles, and in power generation. Program objectives are advanced through a variety of services, including

information dissemination, technical and financial assistance and demonstration projects. The primary funding source for Energy Office activities is the U.S. Department of Energy. Some of the assistance includes:

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- **Solar & Wind Energy Outreach Grants:** These competitive grants are available to non-profit or public organizations to conduct outreach projects in Michigan to promote and market 1) Solar Energy and 2) Wind Energy.
- **Large-Scale Photovoltaic Demonstration Project Grants:** These may be available to public and non-profit organizations for the installation and demonstration of new photovoltaic (PV) systems with a minimum capacity of 10 kilowatts.
- **Community Energy Project Grants:** These may be available to non-profit and public organizations. Funding categories have included: 1) Solar and/or wind energy education, 2) Bioenergy/biofuels/bioproducts education, 3) Green commuting projects, 4) Green building projects, and 5) Statewide energy conferences.
- **Energy Efficiency and Renewable Energy Outreach Grants:** These may be available to non-profit or public organizations for marketing and promotion efforts. Funding categories have included: 1) Solar Energy, 2) Wind Energy, 3) ENERGY STAR Products, and 4) ENERGY STAR Homes.
- **E85 Infrastructure Conversion Incentive Program:** This incentive program assists service stations with a cash incentive covering up to 50% of the cost needed to convert refueling equipment to enable the station to offer ethanol (E85) fuel to its motorists.
- **Bio-fuel Signage Rebate Program:** This Bio-fuel Signage Rebate program offers service stations a rebate to cover 50% of the cost needed to post logo signs along the freeway displaying the availability of ethanol fuel (E85) or biodiesel fuel (B20) at their station.

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Grant for Cutting Edge Plug-In Hybrid Vehicle Study: On May 8, 2008, Michigan’s Public Service Commission announced a \$5,000,000 grant for a partnership between University of Michigan, General Motors Corporation, and DTE Energy Company. This partnership will study hybrid electric vehicles as a Michigan economic development catalyst, the interface between vehicles and utilities, the environmental and electric utility system impacts of PHEVs.

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The **Michigan Biomass Energy Program (MBEP)** regularly provides funding for state bioenergy and biofuels projects. Funding categories typically include biofuels and bioenergy education, biofuels infrastructure, and biomass technology development and demonstrations.

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The **Low-Income and Energy Efficiency Fund**, administered by the Michigan Public Services Commission, provides grants for the implementation of energy-efficiency projects and renewable-energy projects in the state.

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Comment [dh10]: This legislation needs to be recodified. As it currently stands, it is in legal jeopardy.

The **Agricultural Innovation Fund** (aka “Julian-Stille Value-Added Agricultural Development Fund”), administered by the Michigan Department of Agriculture, provides funding for projects designed to establish, retain, expand, attract, or develop value-added agricultural processing and related agricultural production operations in the state.

Michigan Economic Growth Authority (MEGA) high-tech job creation tax credits may be awarded against the Michigan’s Single Business Tax (SBT) for high-tech companies that are looking to expand or locate in Michigan rather than another state. To be eligible, companies must

be involved in technology fields with at least 25% of operating expenses to R&D. Each credit may be awarded for up to 20 years and for up to 100% of the tax related to the project.

The Ethanol & Biodiesel Matching Grant Program, created by PA 274 of 2006, provide incentives to service stations and bulk plants to convert existing fuel delivery systems or create new fuel delivery systems for the distribution of E85 fuel and biodiesel blends.

The State's colleges and universities are also heavily invested in alternative energy research and development. Examples include:

- Michigan State University's Biomass Conversion Research Laboratory and Center for Plant Products and Technologies,
- University of Michigan's Michigan Memorial Phoenix Energy Institute, Transportation Energy Center, and Hydrogen Energy Technology Laboratory (HETL),
- Kettering University's Center for Fuel Cell Systems and Powertrain Integration,
- Lawrence Tech University's College of Engineering Alternative Energy,
- Wayne State University's Center for Automotive Research, NextEnergy Center, and
- Michigan Technological University's Advanced Power Systems Research Center, Power and Energy Research Center, and Sustainable Futures Institute.
- Grand Valley University's Sustainability Initiative

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Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO₂e

Not applicable.

Key Uncertainties

- Most of these options will require approval by the legislature, governor and others. The successful passage of these needed actions, and their implications, is uncertain at this time.
- Costs for implementation are uncertain until the assessment is completed.
- The education of sustainable development champions (i.e., leaders) who have capital is important work that needs to be undertaken.
- Mapping out an infrastructure for green lending could be a challenge.
- There is uncertainty about what the nature and scope of any potential federal GHG program will entail.
- The costs of inaction are not quantified.

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Additional Benefits and Costs

- An estimate of staffing and costs to implement this option is needed.
- Implementation of energy efficiency measures can lead to resource savings that can be put to other purposes by both public and private entities.

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- The availability of state funds is limited. Other financing mechanisms, including private investment, are crucial for the success of this option, beyond any potential passage by the legislature.

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Feasibility Issues

None identified at this time.

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

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What are Michigan’s Advanced Energy Technologies Policies?¶

¶ Under the leadership of Governor Jennifer Granholm, Michigan has begun to aggressively growing the development of a wide variety of clean energy technologies for the future. Plans are underway for rapidly increasing Michigan’s capabilities to manufacture and deploy the latest clean energy technologies, across all sectors including biofuels and bioenergy, solar, wind, and water power, advanced energy storage systems, and the wide variety of sensors, controls, and hardware and software associated with the emerging smart power grid of the future. Additionally, we need to address a wide variety of actions for greening Michigan in every way practical and possible. ¶

¶ By pursuing goals and objectives targeting attraction of manufacturing and development of these clean energy technologies, we can position our state as a world leader in the design, manufacturing, and application of 21st century technologies. The path is clear, we need to revitalize Michigan’s economy and provide employment by tens of thousands of good, secure jobs for a sustainable future, while at the same time making critically important strides to protect our state’s precious natural resources and environment and the health of Michigan’s present and future citizens. ¶

¶ Michigan is uniquely positioned to take advantage of the transitions that are already beginning to revolutionize practically all aspects of business in the new century. Our state’s geography and geology offer fabulous resources for developing wind and water based energy. Our immense agricultural and forestry bases provide excellent resources for biofuels, bioenergy, and bioproducts. Our world-class research universities are already engaged in cutting edge projects in many of the needed areas. Our unequaled workforce can provide the labor required to manufacture the energy systems for the future, and our extensive network of training facilities can help to ensure that the skills required can be readily deployed to both current workers and to the coming generation. ¶

¶ These are disruptive technologie{ ... [12]

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Michigan is currently caught with a dependency on manufacturing that has not kept pace with rapidly changing market demands related to the increased costs of carbon-based fuels.

Energy costs, an uncertain climate future, and federal-level policy responses regarding carbon-constraints will likely require substantial adjustments in all three of Michigan's economic pillars – manufacturing, agriculture/forestry and tourism.

Michigan can turn these challenges into economic growth and job creation opportunities. But to do so, the state must be willing to focus on protecting and building on our key assets, and encourage both the public and private sector to invest in new transformative models. These kinds of intelligent, strategic investments can ensure that Michigan's economy emerges with stronger opportunities for all business and population sectors.

What are Michigan's Advanced Energy Technologies Policies?

Under the leadership of Governor Jennifer Granholm, Michigan has begun to develop a comprehensive plan for aggressively growing the development of a wide variety of clean energy technologies for the future. Plans are underway for rapidly increasing Michigan's capabilities to manufacture and deploy the latest clean energy technologies, across all sectors including biofuels and bioenergy, solar, wind, and water power, advanced energy storage systems, and the wide variety of sensors, controls, and hardware and software associated with the emerging smart power grid of the future. Additionally, we need to address a wide variety of actions for greening Michigan in every way practical and possible.

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Michigan needs a bold vision in order to transition our former auto-based economy to a clean energy technology economy. Investors in a global market place are constantly seeking locations that offer the most advantageous markets, and Michigan has the resources and tools to attract these investors.

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These are disruptive technologies. The transformation is as great or greater than the agricultural revolution and automobile revolution. The search is on, the world over, for how we can grow successful new economies while the climate, environment and public health are protected and enhanced. The business opportunities for those who succeed in such progress are real, yet the risks of being passed over are real as well, as the jobs and economic growth associated with the transformation could bypass our state and take root and grow elsewhere.

MEDC is Reorganizing Around Strategic Industry Clusters Based on input from local economic development organizations throughout Michigan, the major potential growth industries for Michigan's future were independently verified: cellulosic biomass, solar, wind, advanced energy storage, water. We need to make the point unequivocally that these industries surface from an objective process involving extensive input from local and state economic development groups in Michigan. Michigan needs to effectively match it's resources, talents, and capabilities to what is known about the fabulous growth potential in clean technology industries. MEDC Centers of Excellence are one example of how to effectively match up and take advantage of these resources.

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Programs like the 21st Century Jobs Fund have already been established in Michigan, and legislation has been introduced calling for a modest Renewable Portfolio Standard. The

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To capitalize on the economic transformation potential of climate change, the state should focus on the following transformative policies that build on our key assets:

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(insert footnote from MEDC here) .

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Transitioning our strong manufacturing capacity to focus on green, efficient transportation and clean energy and low carbon fuel products and technologies. This should include policies to

Improve Michigan's competitive position and increase conservation and energy efficiency through policies such as the Renewable Portfolio Standard, Energy Efficiency, Integrated Resource Planning, and better energy codes. These types of policies will help attract investments in clean energy businesses, such as wind, solar, and high-tech batteries for hybrid and plug-in electric vehicles and on-site storage. Likewise, incentives are needed for partnerships between green energy companies and more traditional (or retooled) manufacturers to develop home solar and wind recharge units for plug-in vehicles. Similarly, utility companies should partner with on-site storage manufacturers to build a more resilient green grid by encouraging on-site power storage as more wind and solar energy development feeds into the grid. These options would all reduce money flowing from our economy to import carbon-based fuels and lead to job creation (insert footnote from MEDC here) .

Maximize federal funding from current and prospective sources (energy credit allowances) to train and employ low income/ marginally employed people in conservation and energy efficiency projects, including older substandard housing;

Maximize federal funding to support job training at all levels and retool industrial facilities to expand opportunities in the clean energy industry.

Promoting development of Green Jobs in Michigan, particularly related to reducing GHG emissions. Assign this responsibility to existing or potentially new organizational entities possibly the Michigan Department of Labor % Economic Growth (DLEG), Michigan Economic Development Corporation (MEDC) and/or other business-related organizations.

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retro-fitting where appropriate,

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The state of Michigan is uniquely positioned for both significant wind generation potential according to what source? AWEA has Michigan pegged at #14 in terms of wind potential. AND industrial capability (ranked #4) to manufacture, innovate, and utilize wind turbine products.

World class manufacturing environment featuring high quality and cost competitive manufacturing practices, integrated supply chains focused on innovation, and a work force that includes thousands upon thousands of skilled engineers, technicians, and manufacturing professionals.

(strike the hyperbole) Michigan ranks second overall in total industrial research and development (R&D) spending and leads the United States in industrial R&D spending per gross state product.

Further collaboration options exist in working with Michigan's automotive technology and manufacturing industry which has significant cross over opportunities into the wind energy industry. More than 330 companies spend \$10.7 billion annually on R&D and employ more than 65,000 engineers, technicians, and scientists.

Michigan, centrally located around the Midwest manufacturing industry, is also the gateway to the Canadian Province of Ontario's strong manufacturing base and wind power developments.

Opportunity to partner in efforts involving Michigan's 38,575 square miles of Great Lake's fresh water surface area which have an estimated "doable" offshore generation potential of 44,000MW. The Great Lakes also offer a relatively cost competitive global transportation option via international shipping.

Collaboration and membership in the Consortium for Advanced Manufacturing of Alternative & Renewable Energy Technologies (CAMARET), a five university consortium formed to centralize manufacturing research expertise and resources necessary in the wind turbine industry including:

Understanding wind product designs and materials

Improving wind manufacturing processes, systems and facilities

Business and supply chain support

A state government that is emphasizing renewable energy as a critical economic driver and is aligning government departments to optimize and support.

In a recent national BDO Seidman Retail Compass Survey of the nation's largest retailers, when asked to identify the greatest motivator for their company to pursue environmentally friendly practices, two-thirds of the CFO surveyed cited the company's corporate image (54 percent cited "image among consumers" and 13 percent cited "image among shareholders"). Tax break or tax incentives was the greatest "green" motivator among 15 percent of the CFOs, followed by 10 citing city/state or zoning regulations.

Accordingly, the following **Implementation Mechanisms** are (at this time) crude concepts to be "fleshed out" during the next week. Many of these concepts are redundant and/or overlap with Michigan's **Related Policies/Programs in Place** and will be modified and/or eliminated as options.

Financial Incentives:

Tax Breaks, Exemptions & Credits – Various State Examples

Advanced Biofuels Tax Credit – an industrial recruitment incentive to provide a XX% credit for the cost of buildings, equipment, and intellectual property necessary to produce advanced biofuels (ethanol or methanol and/or their derivatives, produced from biomass – waste materials).

Emerging Energy Technology Development Credit - an economic incentive to attract manufacturers of high-tech/high-growth energy technologies on the verge of full entry into the worldwide market. The intent is to provide an environment that creates diverse economic opportunities for Michigan and expands the state's ability to attract higher paying jobs as well as enhancing recruitment, training, and retention of a talented workforce. Such a credit could be in the form of a state income tax credit of XX% of the amount to purchase or construct a facility that designs, develops, or produces photovoltaics (solar cells), wind turbines, electric vehicle components, fuel cells, battery storage, microturbines, Stirling engines, or devices that are reliant on nanotechnology.

R&D Tax Credit - Designed to encourage companies to increase their basic research and development activities in Michigan, the R&D tax credit would

allow companies to receive a credit of XX percent for qualifying in-house research expenses and XX percent for basic research payments to an outside company or university.

Alternative Energy and Energy Conservation Patent Exemption (Corporate) – An exemption from state personal income tax or business excise tax will be provided to the individual if the state approves a patent from any state resident who has applied for, or holds a patent for, an alternative energy or energy conservation system or device.

Renewable Energy Production Incentive - Michigan would offer a payment of 1.5 cents per kilowatt-hour for electricity generated by hydro facilities and on-farm anaerobic manure methane digesters.

Wind & Solar Energy System Manufacturer Business Tax Exemption - For alternative energy equipment manufacturers, Michigan could offer corporations engaged solely in the business of manufacturing, selling, or installing alternative energy devices, be exempt from the business tax.

Wind & Solar Manufacturing Incentive Grant Program – A fund like this could make available up to \$X.X million per year for the manufacture of wind turbines and photovoltaic panels in the state.

Many states offer energy incentives and credits directly in an effort to reduce the rate at which energy infrastructure needs to be expanded.

Bonds

Tax-exempt, Manufacturing/Industrial Development Bond program aimed at small and mid-sized projects – provide attractive rates that are below prime (i.e., about 2 %). This may be applied to financing real estate (land and building) acquisition, construction; renovation and equipment for projects that retain or create employment in clean technology/alternative energy.

Alternative energy bond program to promote an active green building program, and goal of cutting greenhouse gas emissions by 20% by 2015 ... Such a bond program could be extended to local wind farm projects.

Rebates

Michigan Public Service Commission could provide incentives to support existing, new, and emerging distributed (wind, solar, other) energy resources. Such an incentive program could provide rebates for qualifying distributed energy systems installed on the customer's side of the utility meter.

Loans

Establishment of special loan funds for green development could “incentivize” and facilitate green development and further help to identify the types of lending and loan products that would be most beneficial to different aspects of “green” development and manufacturing. This could include:

Green pre-development loans and capital for project planning (i.e., community development loan funds made available to non-profit developers)

Construction Lending (private banks)
Permanent Lending and Operational Period products

Workforce Education, Training and Coordination:

Establishment of an Employment Training fund to provide up to a specified amount per employee for training in the “green” technologies and alternative energy field. Such a fund could be used to train Michigan's workforce in the new technology skills necessary for local businesses to successfully compete in the global economy, and specifically targets manufacturers and their suppliers.

State/local Workforce Development & Investment agencies to assist companies desiring to expand “green” technologies and alternative energy field operations and retain employment in Michigan. Upon request, these agencies could work with industry to recruit and assess candidates from the region’s major metropolitan areas and coordinate the activities of any of the service agencies or training institutions required to meet workforce needs.

Once a decision is made to locate in Michigan, a further detailed discussion can be arranged between the company, the State and the appropriate Workforce Development & Investment agencies to determine the appropriate amount for a federal Workforce Investment Act training grant (funds are contingent on availability of US Department of Labor funds)

Development Zones:

Consider the creation of Enterprise Development Zones, Clusters or Corridors to created or stimulate alternative energy technology business and R&D in targeted areas of the state. Specialized businesses located in such an Enterprise Zone would be eligible for substantial tax credits and benefits, including sales tax credits and preference points on state contracts.

Consider the creation of a Recycling Market Development Zone program, similar to California’s, which combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. This program provides loans, technical assistance, and product marketing to businesses located within these zones that use materials from the waste stream to manufacture their products. Eligible benefits could including: loans at below market, fixed rates, streamlined permitting and siting, technical and marketing assistance. Coordinated local government incentives could include relaxed building codes and zoning laws, streamlined local permit processes, reduced taxes and licensing, and increased and consistent secondary material feedstock supply.

The establishment of Foreign Trade Zones in Michigan may benefit those clean technology manufacturers importing parts or products from overseas which allows for the deferral or elimination of import tariffs.

Research & Development:

Michigan Public Service Commission could establish an R&D Energy Research budget for distributed wind and alternative energy technologies to help

achieve the State's goal of (do we have something like California's 3000 MW goal for solar installations) by 2015. The Commission's intent for RD&D could be to explore various distributed generation technologies that either presently do or could employ wind, solar or other technologies for power generation and storage or to offset coal and petrochemical, as well as market development strategies.

RD&D funds could be applied toward:

- end-use energy efficiency in buildings,
- energy systems integration,
- environmentally-preferred advanced generation,
- renewable energy technologies,
- new battery technologies,
- advanced materials for ultracapacitors,
- fuel cells,
- flywheel energy storage systems,
- energy capture from tidal motion,
- biofuels and other technologies in addition to solar and wind power as subjects for research.

Overall goal of the RD&D funds would be to help build a sustainable and self-supporting industry for customer-sited alternative energy options in Michigan.

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