Cross-Cutting Issues Technical Work Group

Summary List of Pending Policy Options-Draft

Option No.	Policy Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2009–2025 (Million $)	Cost Effectiveness ($/tCO_2e$)	Status of Option
		2015	2025	Total 2009–2025			
CCI-1	GHG Inventories, Forecasting, Reporting, and Registry	*Not Quantified*					Approved Unanimously
CCI-2	Statewide GHG Reduction Goals and Targets	*Not Quantified*					Pending
CCI-3	State, Local and Tribal Government GHG Emission Reductions (Lead-by-Example)	*Not Quantified*					Approved Unanimously
CCI-4	Comprehensive Local Government Climate Action Plans (Counties, Cities, Etc.)	*Not Quantified*					Approved Unanimously
CCI-5	Public Education and Outreach	*Not Quantified*					Approved Unanimously
CCI-6	Tax and Cap/ Cap-and-Trade	*MCAC approved creation of new Market-Based Policies TWG as lead for this option.*					Transfer
CCI-7	Seek Funding for Implementation of MCAC Recommendations	*Not Quantified*					Approved Unanimously
CCI-8	Adaptation and Vulnerability	*Not Quantified*					Approved Unanimously
CCI-9	Participate in Regional, Multi-state and national GHG Reduction Efforts	*Not Quantified*					Approved Unanimously
CCI-10	Enhance and Encourage Economic Growth and Job Creation Opportunities Through Climate Change Mitigation	*Not Quantified*					Pending
CCI-11	Enhance and Encourage Community Development Through Climate Change Mitigation: Address Environmental Justice	*Not Quantified*					Approved Unanimously

GHG = greenhouse gas; $MMtCO_2e$ = million metric tons of carbon dioxide equivalent; $/tCO_2e$ = dollars per metric ton of carbon dioxide equivalent.

CCI-1. GHG Inventories, Forecasting, Reporting, and Registry

Policy Description

Greenhouse gas (GHG) emissions *inventories* track statewide emissions trends and quantify emissions from individual sources and sinks (both anthropogenic and natural). They can be used to inform state leaders and the public and to verify GHG reductions associated with GHG reduction programs.

GHG *forecasts* are scenario-based predictions of future emissions trends built on inventories and projected economic trends, these forecasts are useful for identification of the factors that affect trends and highlight opportunities for mitigating emissions or enhancing sinks.

Detailed GHG *reporting* is needed from all major GHG sources[1] in order to develop accurate inventories. Reporting is also required for sources to participate in GHG reduction programs, such as market-based systems like cap-and-trade and carbon taxation. Participation in a reporting program prior to the establishment of a GHG reduction program establishes an early baseline and such a baseline can be used to avoid disincentives to abate emissions prior to establishment of the reduction program.

A GHG *registry* enables recording of GHG emissions reductions in a central repository. Registries can establish "ownership" of emission reductions, protect baselines, and provide a mechanism for regional cooperation. Registries can also provide a foundation for future trading programs and facilitate the identification of opportunities for reductions.

Policy Design

The State should institute formal GHG inventory, forecast and reporting functions to be carried out by a state agency.

Goals:

- Building on existing State inventory processes and other state of the art methods,[2] utilize a standardized protocol for use in preparing a statewide emission and sink inventory. The protocol should provide guidelines for inventorying all natural and man-made greenhouse gas emissions for source- and consumption-based inventories.[3] The Council recommends that

[1] According to The Climate Registry, individual sources are defined either as "entities" (i.e., any corporation, institution, or organization) recognized under U.S. law, or as "facilities" (i.e., any installation or establishment located on a single site or on contiguous or adjacent sites that are owned or operated by an entity). See http://www.theclimateregistry.org/downloads/GRP.pdf for additional details. The official definition of a "source" is left to MDEQ, but facility-level reporting is strongly recommended.

[2] U.S. EPA State Inventory Guidelines (e.g., Emissions Inventory Improvement Program (EIIP) Document Series, Volume VIII: Estimating Greenhouse Gas Emissions.), U.S. National Inventory Guidelines, and IPPC Guidelines.

[3] Source- and consumption-based inventories typically differ only by emissions associated with the import and export of electricity and steam across state boundaries. The latter can be obtained from the former by adding all GHG emissions associated with the generation of electricity and steam that is imported across state boundaries. The

the responsible agency inventory the six Kyoto gases -- carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulfur hexafluoride (SF_6), and weight these gases according to global warming potentials reported by the IPCC.

- Follow the inventory protocol to prepare annual inventories of emission sources and sinks that are consistent, complete and both production- and consumption-based. The annual inventories should be compiled in a report at least once every five (5) years and prepared with recommendations for improvements. .
- Utilize a standardized protocol for the periodic and complete forecasting of statewide GHG emissions. Forecasting should reflect projected growth as well as the implementation of scheduled mitigation projects. Treatment of uncertainties should be transparent and as consistent as possible across sectors and time. The protocol should specify multiple scenarios. Methods must be consistent with those of the inventory.
- Follow the forecasting protocol to develop forecasts of future GHG emissions in at least 5 and 10-year increments extending at least 20 years into the future.
- Utilize a standardized protocol for the annual reporting of GHG emissions and sinks attributable to direct emissions (and certain indirect emissions)[4] of entities operating within the state. It is recommended that:
    - The protocol follow reporting guidelines being developed by The Climate Registry (TCR),
    - Reporting be conducted at the facility level,
    - To the extent feasible reporting should build upon existing reporting systems,
    - Reporting include direct emissions as well as consumption of electricity and steam (for the purpose of calculating associated indirect emissions).
    - Direct emissions should be reported by entities based upon a means of direct measurement whenever practical and/or required.
    - The reporting protocol should include guidelines for third party verification.
    - Facilities have the opportunity to report emissions sinks, for possible use as offsets in a market-based GHG abatement program (such as CO_2 taxation or cap-and-trade).
    - Facilities should have the opportunity to report verifiable "potential" emissions.
- When the program reaches maturity, all significant sources of GHGs should be required to report emissions to the MDEQ according to the protocol. The definition of "significant" is left to the responsible agency to determine. Utilize a standardized protocol by which to

Council will leave the precise methodology for computing source-based and consumption-based emissions to MDEQ.

[4] According to The Climate Registry, *direct emissions* (a.k.a. Scope 1) are those "from sources within the reporting entity's organizational boundaries that are owned or controlled by the reporting entity, including stationary combustion emissions, mobile combustion emissions, process emissions, and fugitive emissions", and *indirect emissions* (a.k.a. Scope 2) are "a consequence of activities that take place within the organizational boundaries of the reporting entity, but that occur at sources owned or controlled by another entity"

register emissions from sources. It is recommended that the State use TCR's services for this purpose.

- Wherever possible, utilize protocols in harmony with inventory, forecast, reporting and registry activities in other states and regions and nationally.

Timing: This function should be implemented as soon as possible as allowed by current funding and enhanced over time. Because GHG reporting will form the basis for enhanced inventories and forecasts and will be relied upon in the event a market-based program is established, early priority should be placed on developing a reporting program.

Parties Involved: All GHG emission sources and sinks (both anthropogenic and natural) should be included in the inventory and forecast. All entities operating within the state and generating significant emissions should be required to report and a significant percentage of those emissions should be gathered from direct measurements. The definition of "significant" is left to MDEQ.

Other: Subject to consistently rigorous quantification, voluntary GHG reporting should be open to all sources (e.g., combustion, processes, vehicles), including the state and tribal government, municipalities, and other jurisdictions.

Reporting should not be constrained to particular sectors, sources, or approaches.

Implementation Mechanisms

- The goals above provide a detailed description of the recommended approach to implementation.
- Consider implementing registry/reporting activities through The Climate Registry (TCR). However, whether or not TCR is involved in the process, a state agency will need to be given the ultimate responsibility for managing these activities and reporting on outcomes. If the TCR is not used, then the state agency will need to provide the registry services. Note that state funds will need to be allocated to manage the four processes described in this policy.
- An entity will need to be assigned to prepare an assessment identifying the details of this package of initiatives, along with the costs to implement it. Stakeholder input should be sought on this assessment.

Related Policies/Programs in Place

Inventory and Forecast

- In 2005, The Center for Sustainable Systems at U-M submitted an inventory of MI GHGs for 1990 and 2002 to MDEQ
- As required by the Governor's Executive Order No. 2007 – 42 (which established the MCAC), the Center for Climate Strategies prepared an inventory for 1990-2005 and a forecast through 2020.
- Inventory methodologies are recommended in
    - Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories

- IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (2000)
- IPCC Good Practice Guidance for Land Use, Land-use Change, and Forestry (2003)

Reporting and Registries:

- The Michigan Department of Environmental Quality (MDEQ) participates on the Steering Committee for the development of The Climate Registry, a multi-state program designed to be an essential piece of infrastructure for the development of state and federal climate change programs. More than thirty (30) states in the United States and Mexico, and several Canadian provinces have already signed on to join The Climate Registry. For more information about The Climate Registry go to http://www.theclimateregistry.org/.
- Wolverine Power Cooperative, Horizon Environmental Corporation and Ford Motor Company are the only three entities in Michigan that have joined the Climate Registry as "Reporters"
- Signatories of the MGA have pledged to join the Climate Registry.
- Point sources regulated under the EPA Nitrogen Oxides (NOx) Budget Trading Program and Acid Rain Program currently report CO_2 emissions to EPA.
- Michigan PA 451 of 1994, Part 55, Rule 324, Section 5522 of the Air Pollution Control Rules establishes provisions for emission reporting for facilities.
- Michigan PA 451 of 1994, Part 55, Rule 336.202 of the Air Pollution Control Rules requires annual reporting from sources of air pollution, as directed by the MDEQ Air Quality Division, for the purpose of obtaining information on the quantity of air emissions for the proper management of air resources.
- MDEQ-AQD Operational Memorandum No. 13 outlines the pollutant threshold levels (for criteria pollutants) and provides guidance for establishing which emission sources should be included in the annual inventory.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

Costs are uncertain until the assessment is completed.

Additional Benefits and Costs

An estimate of staffing and costs to implement this option is needed.

Feasibility Issues

None identified at this time.

Status of Group Approval

Approved

Level of Group Support

Unanimously

Barriers to Consensus

None

CCI-2. Statewide GHG Reduction Goals and Targets

Policy Description

In Executive Order 2007-42, the Governor directed the MCAC to recommend specific short-term, mid-term, and long-term GHG reduction goals or targets for Michigan. Additionally, the Midwestern Governor's Greenhouse Gas Accord, signed by Governor Granholm on November 15, 2007, establishes a requirement for its staff and appropriate state agency representatives to set regional GHG reduction targets that are consistent with member state's targets. The establishment of a Michigan statewide goal or target can provide vision and direction, a framework within which implementation of MCAC policy recommendations can proceed effectively, and a basis of comparison for regular periodic assessments of progress. GHG reduction goals or targets recommended by the MCAC should be consistent with the parallel goal of an efficient, robust Michigan economy. In pursuit of similar climate progress, approximately twenty other states have established GHG reduction goals or targets.

The Intergovernmental Panel on Climate Change (IPCC) determined that atmospheric greenhouse gases (GHGs) must remain below 400–450 parts per million (ppm) CO_2e to have a reasonable chance of staying below 2°F of warming. This concentration is considered the stabilization target. The IPCC further calculated that the industrialized nations' cumulative emissions over the 2000-2050 period must remain less than 700 gig tons (Gt) CO_2e. This means that the world's industrialized nations must reduce emissions 70-80% below 2000 levels by 2050 to help prevent global temperature increases. For its share, the United States needs to reduce its GHG emissions by about 80% by 2050 in order to stay within its estimated "safe" range of 160-265 Gt CO_2e for that same 50-year period. That comes to a 20% per decade reduction, or 2% per year.

These preliminary target years and GHG reduction goals reflect a high level of uncertainty regarding the costs and benefits of implementing GHG reduction policies in Michigan. These goals will be examined in the second phase of the process and considered in combination with the results of the modeling and evaluation of the selected Policy Options. [NOTE: This paragraph will be altered as the second phase of the process unfolds.]

In accordance with the *Michigan Climate Action Council Interim Report,* "the strategy development process must evaluate and consider economic and environmental impacts, including the implementation costs or cost savings for individuals, communities, businesses, and jobs in Michigan." The Policy Options detailed by the six TWGs (Agriculture, Forestry, and Waste Management, AFW; Energy Supply, ES; Residential, Commercial and Industrial, RCI, Transportation and Land Use, TLU; Cross-Cutting Issues, CCI; and Market-based Policies, MBP) should include policies to reduce GHG emissions at low net cost, and identify opportunities for substantial net savings. Implementation of carefully crafted policy options should bring significant economic benefits to the Michigan economy, by reducing fuel costs through efficiency measures, by reducing the export of capital from the state, and by stimulating the Michigan economy through the creation of new opportunities and jobs in energy efficiency,

clean energy technologies, renewable energy development, transportation, and land-use planning.

The Policy Options considered by the MCAC appear to be able to achieve a XXXX reduction goal by 20XX, a XXXX reduction goal by 20XX, and a XXXX reduction goal by 20XX. (*Note: these numbers/dates will be determined after complete analysis of options.)*

Policy Design

The MCAC preliminary target years and GHG reduction goals of 10%–20% for 2015 and 25%–35% for 2025 proposed in the *Michigan Climate Action Council Interim Report to the Governor* dated April 30, 2008 (Interim Report) are consistent with helping Michigan stay just below the upper limit of the U.S. cumulative budget of 265 $GtCO_2e$.

Goals:

The MCAC recommends the following GHG reduction goals:

Year %	Reduction from 2002 Levels
2002	Baseline
2015	*TBD – at completion of policy option analysis
2025	*TBD – at completion of policy option analysis
2050	*TBD – at completion of policy option analysis

* Interim Report Ranges:

2015- 10-20 % below baseline

2015- 25-35 % below baseline

2050- 80% below baseline

MCAC also recommends that a formal performance tracking mechanism be developed to gauge progress in Michigan toward achievement of the goals and targets.

Timing: TBD

Parties Involved: All parties statewide.

Other: (None.)

Implementation Mechanisms

The GHG reduction goals and targets should be established through executive or legislative action. Various policy options may also depend on implementing or authorizing executive action or legislation. All such directives or legislation shall contain accountability measures for tracking, verification, and measurement of progress toward meeting the specified goal and targets, and include tracking other information important to policy makers and the public.

There are a number of standards that define the process for the measurement of GHGs which should be considered for tracking reductions. Two of the most commonly used are:

- The "Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard" issued by the World Business Council for Sustainable Development.
- International Standard, ISO 14064-1 "Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals". ISO 14064-1 is based on the GHG Protocol.

The State will need to determine whether this can best be accomplished by assigning these coordination functions to an existing agency in state government or by creating a new organizational entity. The designated lead agency for implementation of the MCAC recommendations shall develop specific tracking and verification mechanisms for measuring actual progress towards meeting the specified GHG reduction goals and targets. This will include updates to the energy use and emission inventories identified in CCI-1 and, where applicable, baseline facility-level carbon "footprint" measurements to allow informed business decisions on the potential adoption of suitable GHG reduction options based on analysis of their cost effectiveness. Such assessments will enable us to:

- Identify opportunities for reductions in emissions, including those likely to result in cost savings,
- Assess potential financial exposure to the introduction of emissions trading schemes (and other Government lead policies),
- Assess the relative cost/benefits of seeking carbon neutrality as part of future marketing strategies.

One option for facility-level consideration could be the coupling of GHG reduction goals with energy efficiency. State facilities could be managed by a private energy performance or energy services company (ESCO), which designs, purchases, installs, and maintains energy-saving equipment and guarantees that the energy savings achieved will pay for project costs. Project examples include replacing lighting equipment, modifying or replacing boilers and chillers, installing modern energy management control systems, and replacing motors. Either the existing or new organizational entity (i.e., office of climate change) could provide services aimed at increasing program participation and aiding those who have made commitments to performance contracting, including: t*echnical assistance, education & information,, a* state-specific *Guide to Energy Performance (and Contracting with ESCO's), financing, opinion measurement, and recording and verifying savings.*

The International Performance Measurement and Verification Protocol (IPMVP) establishes standards for measurement and verification and allows building owners, ESCOs and financiers of building energy efficiency projects to quantify energy conservation measure (ECM) performance and energy savings. Where applicable, energy accounting software, such as METRIX, should be used by facilities to record cost savings (and potential) GHG reductions.

To the extent practicable, the State coordinating entity should also track investments in energy efficiency projects and related implementation efforts. This could include alternative energy sources, their types and use rates, the use of GHG offsets, GHG savings realized, the return on investment for those efforts, jobs created and other economic improvements or impacts. Impacts

to be considered include land use changes, water resources protected, waste reduction – recycling increases, market changes and increases/decreases/changes in economic sectors.

The designated lead coordinating agency shall publish these results biennially. The progress achieved (or lack of adequate progress) shall be used to educate the public and policy makers on the effects of efforts to date, and to determine whether additional actions are necessary to meet the goals.

Related Policies/Programs in Place

See the Related Policies/Programs in Place for CCI – 1 for GHG Inventory, Forecasting, Reporting and Registry.

Executive Order 2007-42, signed on November 14, 2007 directed the MCAC to recommend specific short-term, mid-term, and long-term GHG reduction goals or targets for Michigan.

Executive Directive No. 2007-22, signed on November 14, 2007, directed the State of Michigan to: continue reduction in state energy consumption to meet goals specified in the Directive; to improve energy efficiency in the state motor vehicle fleet; to include energy efficiency standards in purchasing; to meet Leadership in Energy and Environmental Design (LEED) standards in new construction; and other measures to reduce energy use and improve energy conservation.

The Midwestern Governor's Greenhouse Gas Accord, signed by Governor Granholm on November 15, 2007, establishes a requirement for its staff and appropriate state agency representatives to set regional GHG reduction targets that are consistent with member state's targets.

[Placeholder for potential legislation such as Renewable Portfolio Standard, etc.]

Type(s) of GHG Reductions

The six types of gases included in the U.S. Greenhouse Gas Inventory are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

Whether implementation of the package of options in the MI Climate Action Plan will achieve the MCAC goals and targets and whether this will result in significant reductions to global climate change impacts in the state, region, nation and beyond.

The costs of inaction are not quantified.

Additional Benefits and Costs

An entity will need to be assigned to prepare an assessment identifying the necessary staffing and costs to implement the coordination elements of this option along with the accountability and tracking system.

Feasibility Issues

None identified at this time.

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

CCI-3. State, Local, and Tribal Government GHG Emissions (Lead-by-Example)

Policy Description

The State of Michigan and many local and tribal governments have undertaken various policy and program actions in several key areas to obtain GHG emission reductions and improve energy efficiency. Many of these on-going and future efforts can provide practical and working examples of what can be done by NGOs, academic institutions and even private individuals to reduce GHG. Much more effort is planned and should be done to further improve our energy efficiency and reduce our carbon dependency and emission rate. A small sample of these activities is listed in the Related Policies and Programs in Place section below.

State, local and tribal governments are responsible for providing a multitude of services for the public that are delivered through very diverse operations. This also makes them responsible for overseeing wide-ranging GHG emission activities and provides leadership opportunities to work with universities, non-profits and the private sector to reduce emissions and increase energy efficiency. For example, the State of Michigan is a major consumer of electricity and as such State government can promote the development of environmentally benign generation and purchase a significant portion of its power through a certified 'green power' program. While the incentive for this will be, in part, market driven as energy costs increase, it will only be achievable through a continued comprehensive analysis of current operations, identification of significant GHG sources, and implementation of changes in technology, procedures, behavior, operations, and the services provided. State, local and tribal governments will find ways to encourage and provide incentives for reducing GHG emissions in a variety of ways. One of the most important is to link GHG reductions to energy expenditures, and demonstrate that reduction in one leads to reduction in the other.

Policy Design

State and local governments should establish GHG reduction targets for GHG emissions within their own geographic areas and their respective jurisdictions consistent with those established by the Michigan Climate Action Council – Final Report to the Governor Executive Order 2007-42. Tribal governments working with each other, with federal guidelines and in accordance with agreements with state government will work for similar goals within their geographic areas and respective jurisdictions. In this case, "jurisdictions" is defined as those buildings, transportation vehicles and associated infrastructure owned and maintained by state, local government and academic institutions. This will help set an example to industry and the general public and build expectations of continued leadership for a "greener" standard of living. For example, actual governmental GHG emissions reductions, and their respective measurements through monitoring, are easier to determine if governmental units disaggregate at the agency, department, facility and building level and require agency- or department-specific reports. GHG reduction progress will first require baseline data at whatever granular level is to be monitored and reported.

State and local governments, tribal governments and academic institutions will develop additional incentives for energy efficiency and GHG reductions. For example, government and

academia shall not invest or issue bonds for their capital investments, including infrastructure development and maintenance, transportation fleets and the like, unless all applicable energy efficiency standards are met.

At this time, no one governmental agency monitors the on-going climate efforts of Michigan's various agencies, departments, and tribal governments. Such coordination should include reviewing the state, local and tribal government activities, and providing direction, guidance, resources, shared approaches, and recognition to agencies or departments and their employees that are working to reduce the government's GHG emissions. All this will take coordination and an extensive amount of education and outreach by a designated lead agency. The State will need to determine whether this can best be accomplished by assigning these coordination functions to an agency in state government.

Goals:

The goal is that each state and local government agency, school district and college/university, in consideration of its current and projected building stock, will lead by example and do the following:

- Determine and quantify its current and projected energy consumption and associated GHG emissions from such consumption.
- Develop and propose a plan to reduce its GHG emissions associated with its building stock commensurate the statewide GHG reduction goals established in the Michigan Climate Action Council – Final Report to the Governor Executive Order 2007-42.
- Provide the plan to the appropriate state agency.
- Report the state and local government agency, school district and college/university progress toward its GHG reduction goals in buildings to the appropriate state agency on an annual basis in accordance w/ established reporting protocols.

Each state and local government agency, school district and college/university shall, in consideration of its current and projected transportation stock:

- Quantify and establish the same goals for transportation stock described above for its building stock.
- Provide the plan to the appropriate state agency.
- Report the state and local government agency, school district and college/university progress toward its GHG reduction goals in transportation to the appropriate state agency on an annual basis.
- Develop appropriate incentives to promote these endeavors.
- Identify opportunities to promote green power purchasing by state and local agencies.

The goal is that each tribal government and tribal government agency, in consideration of its current and projected building stock do those items listed above pursuant to provisions of agreements as negotiated and signed between the tribal governments and the state.

When appropriate, the state should develop and provide guidelines and tools to assess and promote reductions of GHG emissions. Such tools should include instruments to develop baseline energy use, GHG emissions and potential reductions and efficiencies associated with present and future land perturbations, consumer activities and building scenarios. These tools and information sources could be helpful in prioritizing decisions that minimize GHG emissions or highlighting the need for some future authority to regulate and/or monitor GHG emissions. This information would also help guide officials and developers in choosing technologies and activities that could also result in development that either protects or minimizes environment impacts and reduces additional contributions of GHGs.

Timing: The state's (and many local governments') efforts to lead-by-example in reducing its own GHG emissions have already begun through various independent actions and executive directives. The baseline GHG emission inventories from the prior years are already recorded and will provide a foundation for the effectiveness of future reduction efforts. Future annual reports documenting the state's progress in emission reduction efforts will be forthcoming.

Parties Involved: Department of Environmental Quality and other relevant state agencies. Coverage should include operations of all state agencies, local governments and school districts, and tribal governments as applicable pursuant to state/tribal agreements.

Other: It is recommended that the state negotiate an accord with the tribal governments within Michigan that outlines shared concerns regarding climate change issues and sets out provisions for coordinating activities and goals in response to those shared concerns.

Implementation Mechanisms

The designated lead agency shall communicate to the public, policy makers, businesses, local, state, federal, and tribal governments regarding the effects and success of various policy options initiated by state, local and tribal governments to reduce GHG emissions and to implement energy efficiency measures. As such, the designated lead agency will play multiple roles, including coordination among state, local and tribal governmental agencies involved in GHG reductions efforts. Some ongoing GHG reduction options and opportunities were discussed in CCI-2 above and outlines in the 'Related Policies/Programs In Place' of this section CCI policy below.

The designated lead agency shall also serve as a focal point for public education and outreach to market incentives, provide assistance and other resources offered by state government to help all interested parties in meeting our GHG reduction goals. The designated lead agency shall consider all of the following methods to effectively communicate this information:

- Maintain a current inventory of state initiatives, including metrics available to assess the effectiveness of each initiative,
- Maintain a clearinghouse of reliable information on various policy and program actions, technical and financial assistance available, procurement options for low-GHG products, and other relevant information from academic, government, non-government, or business sources,

- Actively market State demonstration projects to potentially interested parties, and assist others (including local and tribal governments) in marketing their demonstration projects. This includes the promotion of quantifiable, sustainable and measurable building and transportation energy conservation improvements and GHG reductions.
- Provide frequent and effective outreach to stakeholders in a wide variety of methods which actively engages the stakeholders in a meaningful fashion, such as:
    - Event planning,
    - Participation in trade shows and conferences,
    - Conduct studies and analysis to assess the potential of alternative technologies for GHG reduction and energy efficiencies,
    - Providing training workshops on integration of GHG Reductions/Energy Efficiency initiatives into local planning and zoning functions, incentives for greater production/utilization of locally grown foods, and other relevant training needs for the public, business, and local or state government,
    - Public Service Announcements, other print, TV, or internet media related methods,
    - Facilitate GHG reduction performance reviews and recognition of agency progress,
    - Maintaining a website containing current information on the inventory of state actions, the clearinghouse of policy and program actions, implementation tool kits, assistance and incentives available, tribal, state, local and federal contacts, and other relevant information,
    - Serve as a liaison with other climate action-based groups around the state and region.

The designated lead agency shall coordinate these efforts with other public education and outreach activities contained in CCI-5, including the Climate Challenge, and other policy options referenced within the other MCAC Technical Workgroups. It will also interact with other state and federal agencies to facilitate the development of needed resources, such as suitable geologic maps for carbon sequestration, and wind and solar energy siting. Likewise, tribal implementation of initiatives should be coordinated and linked to the efforts of the designated lead agency.

Related Policies/Programs in Place

- The Michigan Department of Environmental Quality's participation on The Climate Registry Steering Committee.
- Member of the newly formed Midwestern Greenhouse Gas Reduction Accord
- Michigan Forest Carbon Offset and Trading Program pilot project
- Michigan's on-going efforts to attract green energy companies.
- Local conservation districts establishment of tree plantations.
- Property tax advantages to forest land owners for appropriate sustainable management to provide additional carbon sequestration.

- Michigan Department of Labor & Economic Growth's development of the Biomass Energy Program and Michigan Department of Natural Resources' Michigan Renewable Fuels Commission to encourage energy alternatives
- Renewable energy bills requiring utility companies to put information on customers' bills about renewable energy programs and available tax credits
- Michigan Wind Energy Manufacturing Working Group (sponsored by a consortium of businesses, State agencies and universities) advances the designing, engineering, and manufacturing of wind energy systems in Michigan.
- Midwest Regional Carbon Sequestration Partnership, a United States Department of Energy (USDOE) sponsored partnership of states, universities and companies, is a pilot project to test the potential for sequestering carbon dioxide underground.
- Clean Cities Programs support the use of alternative fuels for vehicles.
- Grand Rapids use of green power for the city's water and sewer system.
- Grand Rapids and Ann Arbor's replacement of their street lights with LED fixtures.
- Michigan State University joining the Chicago Climate Exchange.
- Executive Directive 2007-22: Maintain energy savings targets and develop process for measuring and tracking energy use by state agencies, and develop mechanism to calculate agency carbon footprint.
- Executive Directive 2007-22: State agencies, higher education buildings to be designed and constructed according to (LEED) Green Building Rating System. Hybrid vehicles to be purchased and alternative fuel use.
- Executive Directive 2005-04: "Energy Efficiency in State Facilities" energy use reductions of 10 percent by 2008 and 20 percent by the end of 2015 compared to energy use fiscal year ending September 30, 2002.
- Executive Directive 2007-6: Create a plan to reduce FY2007 state electrical and other energy expenditures by 10 percent from FY2006 levels.
- Executive Directive 2006-06: "Promotion of Green Chemistry" for sustainable economic development and protection of public health.

Many other examples can be found at:
http://www.miclimatechange.us/ewebeditpro/items/O46F17163.PDF

- See the Related Policies/Programs in Place for CCI – 1 for GHG Inventory, Forecasting, Reporting and Registry.
- Executive Order 2007-42, signed on November 14, 2007 directed the MCAC to recommend specific short-term, mid-term, and long-term GHG reduction goals or targets for Michigan.
- Executive Directive No. 2007-22, signed on November 14, 2007, directed the State of Michigan to: continue reduction in state energy consumption to meet goals specified in the Directive; to improve energy efficiency in the state motor vehicle fleet; to include energy

efficiency standards in purchasing; to meet LEED standards in new construction; and other measures to reduce energy use and improve energy conservation.

- The Midwestern Governor's Greenhouse Gas Accord, signed by Governor Granholm on November 15, 2007, establishes a requirement for its staff and appropriate state agency representatives to set regional GHG reduction targets that are consistent with member state's targets.
- ~~[Placeholder for potential legislation such as Renewable Portfolio Standard, etc.]~~Michigan's Legislature recently passed a package of energy-related bills (S.B. 213, S.B. 1048 and H.B. 5524) which create a Renewable Portfolio Standard (RPS), Michigan Energy Conservation Fund, Energy Optimization Plans, Net Metering, Integrated Resource Planning (IRP), and numerous other provisions to be required of utilities and the Michigan Public Service Commission (MPSC).

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- Local government assistance

Type(s) of GHG Reductions

Not applicable

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

It is uncertain if adequate staff resources will be available at this time.

Additional Benefits and Costs

Implementation of energy efficiency measures can lead to resource savings that can be put to other purposes by both public and private entities.

Feasibility Issues

It is a challenge to coordinate numerous local government entities that exist in Michigan.

Status of Group Approval

Approved

Level of Group Support

Unanimously

Barriers to Consensus

None

CCI-4. Comprehensive Local Government Climate Action Plans

Policy Description

A number of local and regional cities and municipalities in Michigan have already taken steps and initiated programs and activities to mitigate climate change in their communities. Many of these cities and communities, 23 in Michigan and over 800 cities nationwide are also signatories to the U.S. Mayors Climate Protection Agreement that have a stated goal of reducing CO_2 emissions by 7% below 1990 baseline levels by 2012 (see note on next page). Additionally cities and communities in Michigan are helping to develop and support additional climate change accountability programs such as the Midwestern Governors Greenhouse Gas (GHG) Reduction Accord, The Climate Registry (TCR), and The Michigan Renewable Energy Program (MREP)

The state and tribal government; regional metropolitan councils, such as the Grand Valley Metro Council; Michigan Municipal League; others could all help create awareness about climate change issues and lead by example in developing climate change programs that are coordinated with the Michigan Climate Action Council. Additionally these organizations and entities could help communicate best practices and success stories through a variety of outlets such as workshops, conferences, summit meetings, a website clearinghouse, education and outreach to public and municipal officials, as well as recognizing local government GHG and CO_2 emission reduction achievements.

Policy Design

The Michigan Climate Action Council (MCAC) recommends that Michigan promote the adoption and support of community climate action plans by all local and tribal governments to establish and achieve local greenhouse gas reductions as well as set future state greenhouse gas reduction goals. The MCAC further recommends that these locally adopted plans be used to stimulate equivalent GHG reduction programs by the private sector and non-governmental agencies in each community by establishing partnerships and collaborative efforts. These private-public sector activities can be considered economic and business development opportunities in concert with policy options CCI-3, CCI-11 and accompanying strategies. Similar to the U.S. Mayors Climate Protection Agreement, the MCAC recommends that local and tribal climate action plans include an impact of the carbon footprint, an inventory of existing GHG emissions, an assessment of economic opportunities for reducing GHG emissions at community scale, the establishment of specific goals, the determination of target milestones, a timeline for GHG emission reductions, and the adoption of local best practices and strategies to adapt to climate change.

The types of community-scale climate change programs and activities to be considered include, but are not limited to, the following initiatives that are in no particular priority order:

- In-depth assessment of GHG inventories using a standardized recommended inventory process such as International Council for Local Environmental Initiatives (ICLEI): Preparing for Climate Change, a Guidebook for Local, Regional, and State Governments and the International Local Government GHG Emissions Analysis Protocol.

- Sustainable urban planning and design such as the USGBC LEED or similar sustainability certification guidelines for neighborhood development
- Land use options such as the need to preserve open space, and the creation of walkable, compact, live and work communities
- Transportation options such as increased public transit, bike trails, car pooling incentives
- Use of clean renewable and alternative energy such as solar, wind, hydro, biomass, geothermal and methane recovery
- Improved energy efficiency such as with the use of Energy Star equipment and overall building code improvements
- Increased use of LEED, Energy Star or similar energy certification of building and design for the construction of buildings, facilities, homes, and neighborhoods
- Improved overall fuel efficiency of fleets such as reducing the number of vehicles, use of alternative fuels, and instituting anti-idling policies
- Improved pumping efficiency of water and wastewater systems such as with the use of renewable energy sources
- Healthier urban "greenspace" and overall improved forestry techniques such as reducing the "heat island effect" through replacement and additional plantings of trees
- Minimization of waste through materials reuse and overall improved recycling rates
- Education awareness and understanding of climate change strategies and implications in the public schools, academic institutions, and at the citizen level

Goals: Adoption of community climate action plans by a significant number of local governments in Michigan. [Specific milestones and goals to be determined]

Timing: TBD

Parties Involved: Cities, townships, counties, metropolitan districts, regional metro councils, school districts and other jurisdictions as appropriate.

Note: In Michigan as of 8-01-08, the following 23 cities have become signatories to the U.S. Mayors Climate Protection Agreement:

Ann Arbor
Battle Creek
Berkeley
Dearborn Heights
East Lansing
Ferndale
Grand Rapids
Holland
Kalamazoo

Lansing
Marquette
Meridian Township
Pittsfield Charter Township
Portage
Royal Oak
Saline
Southfield
Southgate
Sturgis
Suttons Bay
Taylor
Traverse City
Warren

Implementation Mechanisms

There are a number of programs and activities that can be accomplished in concert at a state, regional, tribal and local level to ensure the success of the Michigan Climate Change Action Plan:

- Ensure the creation of an incentive program for local governments through grants, foundations and/or low interest loans
- In conjunction with CCI-5 establish a clearinghouse of information for local governments and communities including climate change best practices, milestones, progress achieved, local GHG inventories, etc. The clearinghouse could also develop and provide collective GHG reductions, key energy efficiencies accomplished, etc.
- Local governments and communities can develop and provide technical assistance for rural communities, tribal governments, etc.

Related Policies/Programs in Place

Executive Directives 2005-4, 2006-6, 2007-6 and 2007-22

Michigan Climate Challenge

U.S. Mayors Climate Protection Agreement (www.ci.seattle.wa.us/mayor/climate/)

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

Substantial uncertainties surround future growth rates in GHG emissions particularly beyond the 2020 timeframe as well as the timing and scope of implementation of the MCAC recommendation for specific policy options. Additional issues surround the implications regarding Senate Bill 213 that was recently passed by the Michigan Senate regarding a state energy plan.

Additional Benefits and Costs

A well-coordinated climate change plan at local levels will help leverage available resources and assets as well as help achieve mutually attainable goals and milestones.

Feasibility Issues

Key cities such as Detroit, Lansing, Ann Arbor, Flint, Grand Rapids, and others will have to step into community leadership roles for the development of climate change goals and strategies. These cities can help facilitate and coordinate climate change action plans at a grassroots neighborhood, community, township, and county level.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

CCI-5. Public Education and Outreach

Policy Description

Public education and outreach is essential to cultivating broad support for GHG reduction activities. Education and outreach will target seven specific audiences in Michigan according to policy recommendations made by members of the Michigan Climate Action Council. These efforts will seek to create awareness of climate change issues along with providing justification for policies designed to reduce GHG emissions. Public Education and outreach efforts should build upon existing work being done by state, tribal and local agencies, utility companies and non-profit organizations.

Policy Design

The policy recommendations for education and outreach will serve primarily as a means of coordinating existing programs rather than creating a host of new initiatives. However, there will be some new ideas introduced through the following goals and recommendations. Each item will be presented in light of current or previous efforts and provide details for implementation.

Goals:

5.1 State Government Education and Outreach Actions

The state should lead by example (i.e., walk the talk) regarding education and outreach. Implementation of the Michigan Climate Challenge Program (MCCP) will be one of the key elements of the state's effort in this area. A summary of this program follows:

Establish the MCCP to encourage Michigan businesses, institutions, local and regional governments, and the general public to make a voluntary public commitment to undertake actions to reduce GHG emissions in their communities. The Department of Environmental Quality, working in conjunction and consultation with other state agencies, will develop and launch the MCCP and include a web-based "Online Pledge" to encourage voluntary GHG reductions throughout Michigan.

The MCCP will provide web-based resources and information in the form of a "Climate Action Toolkit" for individuals and organizations to consider implementing as part of their voluntary pledge to reduce GHG emissions. The "Climate Action Toolkit" will contain specific recommendations for reducing GHG emissions and will also identify measures that can be undertaken to minimize the impacts of climate change so Michigan can be better prepared to adapt to its effects.

Current or Previous Efforts

MCAC Recommendations (see items 5.1.1–5.1.5 of CCI TWG Catalog of State Policy Options text below)

Other state actions will include the following: Establish an ongoing education and outreach committee or board charged with educating audiences regarding climate plan policies and to oversee those relating to education. Include provision to establish age-appropriate testing on the

science and economics of climate change. This board would include representatives from Michigan's public education and higher education institutions.

Create and maintain one or more "outreach coordinator" positions specifically tasked with climate outreach and coordination among state agencies and outside entities (e.g., nonprofits, utility companies, others).

Institute annual Governor's Awards to recognize climate action efforts for several categories. For example, awards might be given to civic groups, small and large businesses, and non-profits groups making a significant difference in reducing GHG emissions within their community or business. Such awards provide a relatively low cost program with significant symbolic value and potentially high media visibility.

5.2 Policymakers (Legislators, Regulators, and Executive Branch) (DM)

Educate policymakers on climate action recommendations, scientific and technological advances and progress towards state goals through regular briefings.

Current or Previous Efforts (House Bills pending or passed related to GHG regulation)

MCAC Recommendations (see items 5.2.1 and 5.2.2 of CCI TWG Catalog of State Policy Options)

5.3 Future Generations

This recommendation calls for integrating climate change into secondary educational curricula, post-secondary programs and professional licensing.

Current or Previous Efforts

MCAC Recommendations (see items 5.3.1–5.3.8 of CCI TWG Catalog of State Policy Options)

One of the best ways to disseminate knowledge about climate change mitigation is through Michigan's education system. The process would begin through organizing groups of educators to identify, assemble and employ climate change curricula appropriate to age groups. It should be noted, however, implementing large-scale curriculum changes may take a number of years. Understanding this, the state must commit to this for the long-term.

The state should develop opportunities to enhance curriculum through grant incentives. Also, promoting research into climate change solutions at state universities would likely be very productive. This might include establishing "Centers of Excellence" on climate issues. These centers could work with industry to develop or enhance supply and demand side solutions. Climate change issues could also be integrated into existing or new educational competition programs. Programs could range from locally sponsored art competitions in elementary schools to state awards for teachers and schools. Like the Governor's Awards referred to earlier, such competitions and awards clearly demonstrate that dealing climate change is highly valued by the state of Michigan and its citizens.

- Work with administrators and student groups in public schools and higher education to integrate "best practices." Implementing such practices might include better building design, turning off computers or other equipment when not in use or even on-site renewable energy.

Use of renewable energy and energy efficiency can be useful in creating thematic learning opportunities to teach science, math and language skills.

- Introduce core competencies on climate change into professional licensing programs (e.g. energy efficiency in building design and construction, use of recycled materials, etc.)

5.4 Community Leaders and Community-Based Organizations

The importance of working with established institutions, municipalities, service clubs, social and affinity groups and nongovernmental organizations (NGOs) cannot be overlooked. This recognition of leadership allows for building on successful models and expanding participation with civic society.

Community engagement might include working with community planning and zoning officials about climate change, impacts and opportunities and identifying community leaders who are acting effectively on climate change and showcase their success. There may also be opportunities to include climate change education as part of orientation sessions for newly appointed or elected officials at varying levels of state and local government. Involvement with community-based organizations might mean assisting groups demonstrating expertise or interest in climate-related issues and developing a network of community-based organizations acting on climate change across the state.

Current or Previous Efforts

MCAC Recommendations (see items 5.4.1–5.4.12 of CCI TWG Catalog of State Policy Options)

5.5 General Public (DB)

Assessing the awareness of the public with regard to climate change mitigation will be instrumental in developing effective campaigns for the general public.

Current or Previous Efforts

MCAC Recommendations (see items 5.5.1–5.5.10 of CCI TWG Catalog of State Policy Options)

Polling and focus group research should be utilized in order to understand the public's perceptions and perhaps misperceptions about climate change. Such research could also assess tolerance for conservation and possible rate increases associated with GHG mitigation (5.5.3). Focus group research in particular could be used for developing a branding campaign (5.5.5) and for framing legislative issues in the media. Funding for this research could possibly come through the DOE or a combination of federal and state grants. There may also be data from existing research that could be helpful in developing effective messages for the general public.

In addition to small group meetings with members of the media, educating broadcasters and editorial boards could be done on a large scale through presentations at statewide media conferences like the Great Lakes Broadcasting Expo sponsored by the Michigan Association of Broadcasters (5.5.1). These discussions should also help facilitate the development and dissemination of public service announcements (5.5.2).

Because modern news media respond very well to events and new announcements, event planning will be important in maintaining a high profile for climate change issues (5.5.4). Events

might include regular press conferences from the governor and other public officials or the release of new data or technology related to GHG mitigation in Michigan.

One way to help coordinate the efforts of environmentally proactive groups in Michigan would be the development of a climate change web site. This site could act as a clearinghouse for climate change information and provide resources for mass media and the general public (5.5.6). In addition to providing climate change information, the site could provide updates on legislative action at the state and federal level. This site could also support outreach efforts by companies seeking to enhance awareness of cost-saving activities for consumers (5.5.7 and 5.5.9) and green power purchasing programs. Such a web site is already being considered as an important element in the Michigan Climate Action Challenge.

Another featured item in the Michigan Climate Action Challenge is the Climate Action Toolkit. These kits can and should be tailored to address anyone of the six target audiences identified by the Cross Cutting Issues Technical Work Group.

- Work to educate consumers and home designers, builders and contractors to ensure awareness of different choices for heating and cooling and the environmental and economic impacts of their choices. Perhaps a major building materials retail outlet could sponsor such a program.

5.6 Industrial and Economic Sectors

The strategic approach should be to target specific industrial and economic sectors. Education and outreach to these stakeholders will be designed to not only provide information but to acquire feedback on new trends in particular sectors such as utilization of smart grid technology by utility companies. Specific sectors include, but are not limited to residential, commercial and industrial power consumers, transportation and land use, energy suppliers and agriculture and forestry. Many large corporations like Wal-Mart have already adopted energy efficiency as a means of improving their balance sheets. Helping consumers in all sectors reduce energy costs through increased efficiency will reduce emissions whether or not reduction is a priority for the respective home or business owners.

Current or Previous Efforts

MCAC Recommendations (see items 5.6.1–5.6.7 of CCI TWG Catalog of State Policy Options)

5.7 Tribal Governments (DM)

While a large portion of the Native American population in Michigan exists within sovereign territories, MCAC members recognize the need to gather input from, interact with and provide information to Native American tribes. Mechanisms for coordination of these initiatives are described in CCI-3.

Implementation Mechanisms

Reaching the goals for climate change education and outreach will require the creation of one or more outreach coordinator positions. The coordinator(s) will help non-profit organizations, utility companies and state agencies maximize their effectiveness in educating the various

constituencies throughout Michigan. Coordinating education and outreach efforts will also ensure message consistency and help avoid redundant efforts.

Effective communication on this scale to diverse audiences presents many challenges. However, the ability to meet the goals laid out in this section will be greatly enhanced by vetting messages, whenever feasible, with polling and focus group research. Furthermore, each goal should contain an assessment component to determine if the outreach efforts have achieved their intended outcome. For instance, a one-year program providing outreach to township zoning boards could be assessed by conducting surveys or interviews with a random sample of board members after the campaign.

Related Policies/Programs in Place

The policies recommended by the Michigan Climate Action Council can be integrated into the Michigan Climate Action Challenge or stand alone as complimentary actions to increase awareness and reduce emissions.

The University of Michigan has already developed a global change and sustainability curriculum and Michigan Tech University is offering a five-day summer institute to help teachers engage middle and high school students in the study of climate change.

Many Michigan universities and community colleges offer courses in renewable energy engineering, maintenance and or installation.

Several national organizations like “Focus the Nation” have developed a K-12 curriculum addressing climate change.

Several Michigan utility companies offer green energy pricing and promote these programs as a way for Michigan residents to reduce their carbon footprint.

Numerous non-profit organizations in Michigan provide information on energy efficiency and adoption of renewable energy.

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

It is very difficult to gauge the effectiveness of educational campaigns. Utilization of the assessment approach outlined in the Implementation Mechanisms section should help do so.

Additional Benefits and Costs

An estimate of staffing and costs to implement this option will be needed.

Feasibility Issues

Fortunately, a wealth of education and outreach expertise with regard to climate change and clean technology already exists within Michigan. What seems to be needed is the ability to coordinate these existing resources. Because the education and outreach coordinator position(s) can be dropped into an existing state agency, the cost will be relatively low for the potential benefits derived from more effective public and organizational communication.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

CCI-6. Tax and Cap / Cap-and-Trade

Policy Description

The lead for developing this Policy Option was transferred by MCAC to the new Market-Based Policies TWG.

CCI-7. Seek Funding for Implementation of MCAC Recommendations

Policy Description

Michigan will seek and stimulate funding and investment to implement the MCAC climate solution recommendations. In accordance, Michigan will position itself to successfully compete for federal and international assistance and matching funds in adaptation and mitigation of climate change impacts. Funding decisions will take into account both economic and environmental impacts, including the implementation costs or cost savings for individuals, communities, and businesses, as well as similar funding actions made by other Midwest states and regions. As Michigan allocates funding for MCAC recommendations, the state will work to identify choices that provide the best opportunities for mitigation of and adaptation to climate change. Concurrently, Michigan will implement initial funding investments that require few long-term costs. In addition, Michigan aims to reduce the costs associated with climate change activities while fostering economic growth within the state.

Policy Design

Goals: Seek and establish capital investments and other funding sources for the implementation of MCAC recommendations. Such funding options might include any one or all of the options listed in the Implementation Mechanisms below.

Timing: The State shall address the concern of obtaining funding for the MCAC recommendations immediately. Funding support for the recommendations must account for sustainability through the short-term, mid-term, and long-term target years for the GHG emission reduction goals.

Parties Involved: State government will lead the strategy of generating investment and financial support. Other sectors, including local government, industry, services, agriculture, consumers, and higher education, will be involved.

Other: Insert text as appropriate.

Implementation Mechanisms

An entity will need to be assigned to prepare an assessment of the alternative financing mechanisms such as identified below and to make recommendations about which ones to pursuit and whether legislation is required to effectuate the financing option.

- State revolving funds established to provide affordable access to credit,
- Federal and/or Midwest Accord funds generated as a result of set asides of CO_2 emission allowances via auctions to the private sector,
- Funds earmarked for the Great Lakes, Michigan and high energy use states as a result of regional activities and federal climate legislation,
- Funds resulting from a national or regional cap and trade program.

- Funds generated from public benefits charges on utility bills pursuant to SB 213.

Related Policies/Programs in Place

Great Lakes Fisheries Trust

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

How much funding will become available to implement Climate Action Plan recommendations.

Additional Benefits and Costs

An estimate of staffing and costs to implement this option is needed.

Feasibility Issues

Given Michigan's economy, the availability of state funds is limited so other financing mechanisms are crucial.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

CCI-8. Adaptation and Vulnerability

Policy Description

Climate change is a potentially serious threat to communities, natural resources, and wildlife in Michigan, the United States, and around the world. While addressing the source of climate change and related GHG mitigation options is critical, it is also important that decision makers and the citizens of Michigan understand how climate change is impacting and will impact the natural resources and natural resource-based economic activity in the state. Additional attention, research, and funding is needed to assess the impact of climate change on Michigan's fisheries and wildlife and help them adapt, while also reducing the other stressors on their habitats and ecosystems. Communications, research, and funding are also needed to assess and moderate climate change's impact on our land and other natural resource-based industries (forestry, agriculture, tourism and recreation).

The State of Michigan should undertake a comprehensive planning effort to assess and address the state's vulnerability to climate change and adaptation opportunities. Various organizations and agencies in the state are already collecting some of the information needed to make such an assessment.

Policy Design

Goals:

Undertake a comprehensive planning effort to assess and address the impact of climate change on the Great Lakes, the state's natural resources, and on wildlife and fisheries. By the end of 2008, the Michigan Climate Action Council should begin the planning process by developing a scoping document that identifies technical and financial resources and research needed to undergo a comprehensive planning process in 2009. When applicable and feasible, the scoping document should identify on-going and planned research efforts that could contribute to the planning process.

A multi-agency and diverse stakeholder team should be formed to follow through with the planning process in 2009 and beyond. Their task is to:

- Integrate climate adaptation into existing and future natural resource management plans, and where possible, related research and assessments. This may include, for example, the State Forest Management Plan; Wildlife Action Plan; Coastal and Estuarine Land Conservation Plan; Aquatic Nuisance Species State Management Plan; fisheries management plans; state/regional watershed management plans; infrastructure assessments, including aging dams, bridges and sewer infrastructure; threatened/endangered and species-specific management plans.
- Educate and reach out to groups and organizations associated with the Great Lakes and natural resource-based industries.

- Develop a plan for accomplishing a periodic assessment of the ongoing and projected impacts of climate change on Michigan's natural resources and natural resources-based economic activity. The assessment would focus on
  - *Water Quality and Quantity*—surface water resources and supply management; changes to seasonal snow and ice cover; groundwater depletion and rate of recharge; increased runoff and pollution of freshwater sources from intense storm events; capacity of water treatment and overflow infrastructure; Great Lakes navigation and water levels;
  - *Air Quality*—
  - *Landscape Change and Land-Resource-Based Industries*—forest loss due to drought, wildfires, infestation, diseases, species migration and loss; tourism and recreation impacts from shorter winter recreation season and a longer summer season; agricultural productivity, especially shifting microclimates and crop diversity impacts; recreation and other amenities;
  - *Ecosystem Health*—species diversity; fish and wildlife and their habitats; habitat fragmentation; invasive species.
  - *Human Health*—including increased levels of heat stress, respiratory illness and chronic disease.
- The assessment should treat impacts arising from climate changes of the present and recent past and impacts that are likely or possible 30 to 50 years into the future.
- The assessment should rely on the best available regional climate data and assessments.
- In addition to this assessment, the group should consider how to *incorporate* climate change adaptation into various state, university and other field studies, assessments and research projects where the primary purpose is not necessarily climate change-related, such as ecosystem productivity, population and species diversity, and crop and pest management.

Timing: The Council's scoping document should be developed for submittal to the Michigan agencies by January 2009.

Parties Involved: Michigan Departments of Natural Resources, Environmental Quality, Agriculture, and Labor and Economic Growth; U.S. Fish and Wildlife Service, Department of Agriculture (NRCS and Forest Service), and Environmental Protection Agency; Tribal environmental staff, academic researchers at public and private universities and colleges in Michigan (and outside researches as needed); environmental/conservation organizations; natural resource-based industry leaders.

Implementation Mechanisms

Funding will be needed in order to develop a comprehensive Climate Adaptation Plan for Michigan, and possibly surrounding areas in the Great Lakes Basin, including the Canadian side of the Great Lakes. The state should begin a dialog with other potential interested entities to explore funding options for such a regional or statewide initiative.

The state may want to convene a group of stakeholders to help design the adaptation process.

If funding can be developed then an inventory of related projects or studies either underway or already completed should be prepared. Some examples of these initiatives are included in the Related Policies and Programs in Place element below. Integration of the ongoing efforts would then need to be considered.

Finally, if the funding can be arranged then a comprehensive assessment of vulnerabilities should be prepared, and that should set the stage for development of a package of adaptation strategies being developed for consideration by the state.

Related Policies/Programs in Place

There are many ongoing studies that have been completed or that are underway that could be useful source of information. Some examples include:

- MW Governors Accord process
- Healing Our Waters (HOW) Campaign
- Numerous Tribal studies
- Great Lakes Fisheries Trust program
- Great Lakes and St. Lawrence Cities Initiative

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable

Key Uncertainties

Whether adequate funding can be identified to conduct the comprehensive vulnerability and adaptation strategies development.

The level of interest among other Great Lakes Basin States and other entities in participating in the assessment.

Additional Benefits and Costs

Identification of key vulnerabilities and state or region-wide adaptation strategies will help mitigate most severe impacts. This will also benefit other governmental entities, citizens and businesses in preparing their own adaptation strategies.

Feasibility Issues

The ability to predict the magnitude of the vulnerabilities.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

CCI-9. Participate in Regional, Multi-State and National GHG Reduction Efforts

Policy Description

The MCAC recognizes that collaboration is a key approach for the successful implementation of the state climate change strategies. Because the execution of policies designed to reduce climate change impacts all sectors of society, actions must be broad-based and inclusive. For this reason, collaborative regional and multi-state reduction efforts offer promising possibility for accomplishing MCAC target goals. Joint regional, multi-state, multi-province and in some cases, national approaches to GHG emission reductions and energy efficiency options can provide greater opportunities for success, particularly because the issue of climate change is not constrained to political boundaries. Accordingly, Michigan recognizes, has considered, and has joined other regional and national, market-based GHG reduction strategies. Such strategies propose to mitigate and adapt to climate change in various sectors including energy supply, residential, commercial and industrial, transportation, land use, agriculture, forestry, and waste management.

The current initiatives include the state's membership in the Midwestern Greenhouse Gas Reduction Accord whereby the member governors and Canadian premier agreed to establish a Midwestern greenhouse gas reduction program with targets and timeframes that are consistent with state policies. Also included in this initiative is the development of a market-based, multi-sector cap-and-trade program by November 2008 to achieve reductions. An additional joint initiative is the participation of the Michigan Department of Environmental Quality on the Steering Committee for the development of the Climate Registry. The multi-state Climate Registry was designed to be an essential piece of infrastructure for the development of state and federal climate change programs by forming a partnership to produce GHG measurement protocol. A third significant initiative offering opportunities for multi-state collaboration is the Chicago Climate Exchange (CCX). Michigan, as well as all other members of the CCX, must achieve a minimum six percent reduction in greenhouse gas emissions from 2000 levels by the year 2010. This goal is in accordance with Michigan reduction targets.

These developments will be continued and will function as models to form the basis of future Michigan GHG reduction programs. Michigan should consider developing supplementary or ancillary registry capacities or opportunities to meet all of the state needs. Michigan will continue to examine the decisions made by other states and regions, particularly in the Midwest states and in Canada, to identify opportunities for collaboration with other GHG reduction efforts; Michigan will implement regional climate reduction initiatives such as a regional carbon cap-and-trade system. The Governor and the Michigan Legislature should aggressively push for and continue to encourage Federal action to reduce GHG emissions and to ensure that Michigan is well represented and protected at the Federal level. An aggressive approach to GHG reductions within the United States will have a significant effect on the international reductions needed to begin reversing global warming trends. Ultimately, many of the climate protection issues need to be addressed at the national level. Michigan must help shape these national initiatives.

Policy Design

Goals: Ensure that the cost effective decrease of GHG emissions complies with the reduction levels adopted by the Michigan Climate Action Council. The reductions levels should be adopted in a manner that maximizes public benefits and induces innovation in energy efficiency and sustainable energy technologies while avoiding inequitable impacts. Such impacts will include the avoidance of cross-state transport (or emission "leakages") of GHG.

Timing: Beginning January 01, 2009, the Administration will annually update the legislature on regional and national GHG reduction progress and other opportunities that have arisen to ensure that Michigan will achieve its goals, as stated above.

Parties Involved: The Governor and administration staff should implement the legislative directive (see below and in CCI-3) and initiatives pertaining to energy and environmental finance and policy. This should also include our oversight of pertinent Regional and Federal climate initiatives as they impact Michigan to ensure that our state is adequately represented, funded and protected. Accordingly, the committee chairs with jurisdiction as well as the ranking minority members should be informed of the relevant legislative progress. Additionally, the state should work with relevant federal agencies in the formulation of appropriate strategies to reduce GHG emissions.

Other: Insert text as appropriate.

Implementation Mechanisms

Michigan will continue its proactive engagement in the Midwestern GHG Accord process as described above.

Michigan will also work with the 12 federally-recognized tribes in the state to help coordinate local climate change strategies. This will be accomplished through either existing agencies or a designated state entity charged with climate change issues, and through the use of existing MDEQ-tribal agreements such as the Water Accord and others that allow dialog on environmental issues of mutual interest Likewise, Michigan will welcome and seek out a mechanism to coordinate its climate change and GHG reduction efforts with national tribal organizations, such as the climate mitigation and adaptation dialog recently initiated by the National Congress of American Indians (NCAI) and others such as the Council of Energy Resource Tribes (CERT).

Michigan should also further investigate, and if it is determined in the state's best interest, join the Climate Action Registry and Chicago Climate Exchange.

Related Policies/Programs in Place

As part of the Midwestern Greenhouse Gas Accord, the ~~g~~Governor agreed to the Midwestern Energy Security and Climate Stewardship Platform which commits to the following regional goal: Maximize the energy resources and economic advantages and opportunities of Midwestern states while reducing emissions of atmospheric CO2 and other greenhouse gases.

- Executive Directive No. 2007-22, signed on November 14, 2007, directed the State of Michigan to: continue reduction in state energy consumption to meet goals specified in the Directive; to improve energy efficiency in the state motor vehicle fleet; to include energy efficiency standards in purchasing; to meet LEED standards in new construction; and other measures to reduce energy use and improve energy conservation.

- ~~[Placeholder for potential legislation such as Renewable Portfolio Standard, etc.]~~Michigan's Legislature recently passed a package of energy-related bills (S.B. 213, S.B. 1048 and H.B. 5524) which create a Renewable Portfolio Standard (RPS), Michigan Energy Conservation Fund, Energy Optimization Plans, Net Metering, Integrated Resource Planning (IRP), and numerous other provisions to be required of utilities and the Michigan Public Service Commission (MPSC).

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

There is uncertainty about what the nature and scope of any potential federal GHG program will entail.

Additional Benefits and Costs

An entity will need to be assigned to prepare an assessment identifying the necessary staffing and costs to implement the coordination elements of this option along with the accountability and tracking system.

Feasibility Issues

None identified at this time.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

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 supportive ~~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:

1. 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~~ spaces 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 independence, but as a means of reducing GHG emissions.~~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 o~~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.

2. 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, standardizes zoning requirements, 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.

3. Seek More Federal Support

- 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
- Continue to seek funding for advancing fuel cell research and development
- Seek more support for research on coal gasification and carbon capture and sequestration

4. 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 and ~~,~~ advanced energy storage~~, water~~. These sectors have been identified through an objective process involving extensive input from ~~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) nationally ranks ~~has~~ Michigan ~~pegged~~ at #14 in terms of wind potential and #4 in terms of industrial capability (ranked #4) to manufacture, innovate, and utilize wind turbine products. ~~It~~Michigan 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.

- Michigan~~,~~ is centrally located ~~around the~~as a Midwest manufacturing ~~industry,~~state and 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.
- Examine the opportunity to take advantage of Michigan's unique geologic features to employ carbon capture and sequestration as outlined in the Energy Supply TWG Options ES-6 and ES-8.
- 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.

5. 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.

6. 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.
- Reduce black soot emissions from diesel emitting mobile sources by creating programs to retrofit engines with diesel particulate filters.

7. 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

- 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.)
- 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);
- Reduce air and water pollution and provide habitat protection for better hunting, fishing and other recreational activities;
- Create incentives to promote re-forestation and a-forestation;
- Promote methane capture from agricultural and waste management activities as long as they do not increase air or water pollution.
- Encourage investments in net low carbon fuels and water conservation;

8. 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

9. 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:

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:

    - 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 on a long-term basis.

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:

- 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.
- 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.

- 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.

- Support the two parallel Implementation Mechanisms stated in the Energy Supply-Technical Workgroup Policy Options which focus on Carbon Capture, Sequestration & Reuse (CCSR) and Advanced Fossil Fuel Technology. These two policy options are:
  - ES-5 Advanced Fossil Fuel Technologies Incentives, Support or Requirements, and
  - ES-9 CCSR Incentives, Requirements, R&D and/or Enabling Policies

- Support the Midwestern Governors Association (MGA) Renewable Electricity and Advanced Coal with Carbon Capture Advisory Group's Policy Template Options.

- 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 collar" 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. 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.
- Michigan currently has draft siting guidelines for wind energy systems which include such things as height, noise, setback and other applicable requirements (http://www.michigan.gov/documents/Wind_and_Solar_Siting_Guidlines_Draft_5_96872_7.pdf). While this is a good start, these guidelines were created as recommended zoning language for local governments to use to amend their zoning ordinance. Consideration should be given toward the development of State wind energy siting laws. Such a law would include land use and right-of-way considerations, local zoning ordinances, condemnation procedures, minimum set back distances of turbine towers and related support equipment from residences and public roads, off-site property boundaries, etc. Other crucial issues, such as avian, wildlife and aesthetic considerations, should also be considered.
- 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~~ Michigans's Legislature recently passed a package of energy-related bills (S.B. 213, SB 1048, and HB 5524) ~~legislation to mandate~~ which create a ~~r~~Renewable ~~p~~Portfolio ~~s~~Standard (RPS), Michigan Energy Conservation Fund, Energy Optimization Plans, Net Metering, Integrated Resource Planning (IRP), and numerous other provisions to be required of utilities and the Michigan Public Service Commission (MPSC). ~~s~~ The package had broad support from both political parties, 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.
~~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.~~

The MPSC is taking the lead on drafting guidance documentation explaining these various provisions and the subsequent requirements set forth in the legislation. A brief explanation of the bills follows:

- Senate Bill 213: Includes a renewable portfolio standard (RPS), creates the Energy Conservation Fund, require utility energy optimization plans, wind energy resource zones, and net metering. The renewable portfolio standard will be 10% by 2015. Energy optimization credits and advanced cleaner energy credits can be used to partially meet the RPS requirement. Detroit Edison is required to have at least 300 MW by 2013 and 600 MW by 2015 and Consumers Energy is required to have 200 MW by 2013 and 500 MW by 2015. The enrolled version of Senate Bill 213 is at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/Senate/pdf/2007-SNB-0213.pdf

- House Bill 5524 amends P.A. 3 of 1049, Public Act 141 of 2000 (Customer Choice and Electricity Reliability Act) and designates/requires the MPSC, an autonomous entity within DLEG to perform a number of actions described in detail in the bill. The enrolled version of House Bill 5524 is at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/House/htm/2007-HNB-5524.htm

- Senate Bill 1048 would amend the Income Tax Act to allow a taxpayer who purchased and installed certain qualified home improvements for his or her principal residence during the tax year to claim an income tax credit equal to 10% of the amount the taxpayer paid in the tax year for the purchase and installation of each qualified home improvement or $100, or for a husband and wife filing a joint return, $200, whichever was less. The bill would apply to the 2008 tax year and subsequent tax years.

  "Qualified home improvement" would mean any qualified Energy Star product intended for residential or noncommercial use that meets or exceeds the applicable Energy Star

energy efficiency guidelines developed by the U.S. Environmental Protection Agency and the U.S. Department of Energy, including windows, doors, insulation, high-efficiency heating and cooling equipment, and any appliances such as dishwashers, clothes washers, and refrigerators. The enrolled version of Senate Bill 1048 is at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/Senate/htm/2008-SNB-1048.htm

Centers of Energy Excellence: Governor Jennifer M. Granholm signed legislation on July 8, 2008 creating Centers of Energy Excellence (COEE), 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.

Related initiatives include Senate Bill 1380 / Public Act 175 which established a COEE Program to promote the development, acceleration, and sustainability of energy excellence sectors in Michigan. The COEE Program was officially launched following the Michigan Strategic Fund Board meeting on August 27, 2008. Key provisions include:

- The Michigan Strategic Fund (MSF) Board shall not expend more than $45,000,000 of the money appropriated for programs authorized under this chapter from the 21st Century Jobs Trust Fund for the COEE Program.
- Grants provided through the COEE Program shall only be awarded to for-profit companies. Participation of at least one qualified business and at least one institution of higher education are required to operate a Center of Energy Excellence.
- The funds can be used for one of the following purposes: match for foundation funding, federal funding, or international investments up to 50% of the total project cost; accelerating the commercialization of an innovative energy technology or process that will be ready to market within 3 years of the agreement date; activities of the Center, including, but not limited to, workforce development and technology demonstration.

The new Centers of Energy Excellence include;

- **Sakti3** in Ann Arbor will receive $3 million to establish a center focused on next-generation lithium battery technologies and processes. The University of Michigan will contribute to research on battery life cycles;

- **Swedish Biogas International** will utilize $4 million to launch a waste-to-energy biomethane center at Flint's waste water treatment facility. Kettering University's incubator will also serve as the initial headquarters for the Swedish company's North American subsidiary;
- **Mascoma Corporation** will use $20 million to establish a cellulosic ethanol center in Kinross. Michigan State and Michigan Tech will focus on improving the supply chain for woody biomass feedstock.

More information about these Centers of Excellence are at; www.michiganadvantage.org/21CJF

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 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.

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.

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.

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:

- **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.

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.

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.

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.

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

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per $MTCO_2e$

Not applicable.

Key Uncertainties

- Most of these options will require approval by the ~~l~~Legislature, ~~g~~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., lenders) 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.

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.
- 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.

Feasibility Issues

None identified at this time

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

CCI-11. Enhance and Encourage Community Development Through Climate Change Mitigation: Address Environmental Justice

Policy Description

Climate change is predicted to cause significant changes in both the atmosphere and the natural environment. This includes weather events, such as increases in extreme weather events and droughts, as well as significant changes in water levels, including rises in sea level in some regions and lower water levels in the Great Lakes.

Although all segments of Michigan's population and economy will be impacted by climate change, certain communities run the risk of being disproportionately burdened by costs and challenges, particularly poor communities and communities of color. As evidenced by the impact of Hurricane Katrina in New Orleans, communities in the United States continue to be unprepared—socially, financially and environmentally—for major natural events.

Even in the absence of a major natural disaster, climate change has the potential to devastate an unprepared economy. Transitional costs will likely be regressive and could further burden populations already suffering from economic hardship with unbearable costs.

To encourage community development through climate change mitigation and ensure that vulnerable communities are protected, the State must engage a range of communities in a collaborative planning process that works toward a transformational response to climate change. This response must be tailored to the regressive costs posed by climate change, and must act to address the economic and health impacts of a warming climate.

Policy Design

Goals:

- Collaborative Planning Process

  Michigan's climate change mitigation policy must ensure that those populations most vulnerable to a changing climate's effects have a voice in the planning and decision-making process of climate change response. These policy discussions should include informed voices for Michigan's older population, people of color and those in poverty throughout the state, among others.

  Major plans for rebuilding or restructuring economic or physical infrastructure assets should be an open, collaborative effort. Climate response policies should be undertaken with rigorous application of the principles contained in Michigan Executive Directive 2007-23: Promoting Environmental Justice, and should ensure that organizations currently working with impacted populations are invited to participate in policy development.

- Transformational Response: Distribution of Costs and Benefits

  The social, environmental and economic changes posed by climate change and the transformation that will be required in response will result in both costs and benefits to the

people of Michigan. The burden of costs is likely to be regressive and could continue to highlight the disproportionate allocation of resources and risks prevalent in today's society.

Therefore, the state's response to these costs and benefits must be cognizant that economic carrying capacities differ among various populations, particularly in a short-term adjustment process. State policy should build in mechanisms to account for the disparate impacts of transitional costs, including a wide array of products and services, from gasoline and electricity to food, mass transit, health care, and other products or services with significant energy inputs. Because the state's physical and economic infrastructure cannot be altered overnight, policy should address the plight of populations impacted by economic obsolescence and other changes.

Meanwhile, taxation and pricing strategies specifically designed to limit or reduce greenhouse-gas emissions, including cap-and-trade or CO_2 taxation, should include provisions to mitigate regressive burdens. Putting a price on emissions will raise prices for fossil-fuel energy products, affecting households with limited incomes the most. Climate change policies should provide sufficient revenue to cushion the impact on vulnerable populations and meet other legitimate public needs, such as expanded research on alternative energy sources.

- Opportunities for Change

  The challenges posed by climate change also present potent opportunities for an economy that is ripe for change. The call to address climate change provides an opportunity to hasten economic and social transformations that could support social and environmental equality and help transform Michigan's urban communities into healthier, more vibrant places to live and work.

  Michigan's response to climate change should prompt us to make a faster, more successful transition to the New Economy. Recognizing the three pillars of Michigan's old economy and moving to build on this foundation with policies appropriate to new economic and environmental conditions, Michigan can refocus our manufacturing base; protect our agriculture and forestry sector; and renew our tourism industry. If investments are made intelligently, Michigan's economy can emerge with stronger opportunities for all business and population sectors.

Timing: Commence in 2009.

Parties Involved: Meeting these various needs will become the responsibility of various departments and agencies within federal, state, tribal, and local governments, NGOs, and others, including the Department of Environmental Quality Environmental Justice Working Group. These entities will require adequate budgets and infrastructure to plan and respond appropriately. The budget needs to sustain these efforts should be well and frequently communicated to our Congressional delegation.

Implementation Mechanisms

1. Collaborative Planning Process

A. Fully implement Michigan Executive Directive 2007-23 (Promoting Environmental Justice). MDEQ is directed to develop and implement a state environmental justice plan and assemble an environmental justice advisory group (see B below). Plans should incorporate greater levels of interdepartmental cooperation (MDOT, MDCH, MEDC, MDNR, etc.) on environmental justice and climate change response (see C below). The advisory group should be charged with facilitating innovation in Michigan's public engagement practices, including strategies for better identifying and recruiting participation of affected parties in decision-making (see Public Engagement below).

B. The Environmental Justice Advisory Committee should be charged with promoting greater cooperation between state agencies, businesses, community groups, and transportation users to better coordinate resources and facilitate equitable development of climate response policy. This group should consist of stakeholders and an interdisciplinary cross-section of relevant government agency staff and should be charged with addressing cumulative impacts on affected communities (MDOT, MEDC, MDA, etc.) especially as it relates to local health impacts, climate change response and energy investment. The committee will provide a forum for discussions about issues such as Green Job retraining for low-skilled workers, infrastructure needs, and continuous process improvement.

C. Review existing and proposed state programs to increase equity across regions and communities, and reduce disproportionate impacts to minorities and low-income residents. State agencies, including MDEQ, MEDC and MDOT, should review their current programs (including project funding, matching grants and job-training and incentive-based economic development programs) and develop procedures to ensure that environmental justice principals are incorporated into all decisions.

D. Public Engagement. The state should focus targeted resources on facilitating greater innovation in Michigan's public engagement practices in anticipation of climate response policy. This initiative should increase the number of high-quality comments gathered and considered in decision-making and greatly reduced disproportionate impacts to minority and low-income community. It should include a strong, cross-departmental focus on developing and implementing innovative strategies for identifying, recruiting and engaging participation of affected parties in decision-making such as:

- Problem and Need Identification. Early and continuous involvement of traditional and non-traditional community members should include the active recruitment of all stakeholders in pre-project "visioning" discussions. This should include direct outreach and consultation with those representing minorities, people with disabilities, low-income people, children, youth, seniors, religious interests, and homeowners in areas where projects are likely to be proposed.
- Diversity of Methods. Include a variety of community engagement methods to gather input of proposed projects, including interactive design charettes as well as both open house and town hall-style meetings that allow for a direct interaction and group question-and-answer formats. On projects that are extensive in scale or impact or that are likely to draw significant controversy, state departments should regularly utilize a

so-called "charrette" format for public involvement, offering an intense, interactive public planning process that occurs over several consecutive days. A well-done charrette solicits comments from residents, provides them with tools, and puts them in charge of decision-making.

- Public Advocate or Ombudsman. The state should, at the request of the EJ Advisory Committee, provide communities with a "public advocate" for select proposed projects and policy development opportunities. The qualified professional would aid and represent the local community, translate technical information, and negotiate with department professionals throughout the process. This innovative concept likely could create a budget cap based on the size of the proposed project budget.
- Development and distribution of public engagement guidelines. The guidelines will include the methods for identifying stakeholders and maintaining communication throughout the project or policy development process.

2. Transformational Response

A. Mitigate regressive energy burdens by offering or subsidizing programs that reduce costs for low-income individuals for home heating and transportation needs, such as:

- Updated building codes that reduce energy demands for home heating and cooling.
- Energy efficiency programs that provide funding and job-training for home energy audits, insulation and retrofit programs, and appliance replacement opportunities to low-income residents.
- Live-Where-You-Work programs and location efficient mortgages that encourage and support home ownership in communities in close proximity to transit and job opportunities and which reduce auto dependency.
- Pay-As-You-Drive auto insurance to encourage alternative transportation and reduce high auto insurance burdens on minority and low-income communities.
- Greater investment in mass transit options that provide quick, reliable, low-GHG access to daily needs.
- Increased number of urban grocers, farmers markets and other sources of affordable, healthy food in core urban areas, reducing the need to drive long distances to grocers.

B. State government should ensure that environmental justice oversight is a key component of statewide GHG reduction plans (see CCI-2). As recognized in CCI-2, the State will need to determine whether this can best be accomplished by assigning these coordination functions to an existing agency in state government or by creating a new organizational entity. Regardless of which state department or agency is assigned to manage such plans, oversight should include a requirement that plans include a clear analysis of both the harms and benefits to various populations. This analysis should be published prior to implementation and be inclusive of both economic and non-economic considerations.

3. Opportunities for Change

A. Investment in Clean Energy Manufacturing and Job Retraining. The state should:

- Implement a robust renewable energy portfolio standard and energy efficiency program to build a market for clean energy solutions
- Develop a program to support job-training programs for the manufacture and deployment of a variety of clean energy technologies (efficiency upgrades, windmills, etc.). Cooperate with Lawrence Tech and Lansing Community College, etc.
- Retool and capitalize on Michigan's latent manufacturing capacity. Many of the manufacturing jobs lost in the last several decades in Michigan could be replaced and idled factories retooled to meet the demand for clean energy technologies, such as windmill components, gear boxes, etc.

B. Efficient Use of Existing Infrastructure. The state should review programs to ensure we achieve maximum value out of existing and proposed infrastructure through improved regional land use planning, transit investment and regional tax-base sharing. This would support urban redevelopment and tax base in core communities and relieve some disproportionate burdens on individuals and business locating in the state's urbanized areas.

C. The state should review economic development investments to achieve greater efficiency in business recruitment and siting through location targeting that achieves where possible:

- Reduced personal/employee transportation burden (i.e., business located with areas with options for transit, walking and biking, carpooling, etc.),
- Reuse and updating of already existing housing, schools and infrastructure in existing communities (Michigan Land Use Leadership Council, 2003)

Related Policies/Programs in Place

- Michigan Executive Directive 2007-23 (Promoting Environmental Justice)
- 21st Century Jobs Fund
- No Worker Left Behind Initiative
- MSHDA Urban Revitalization Program (Cool Cities/Cities of Promise)
- Green Jobs programs Lawrence Tech and LCC
- Michigan Land Use Leadership Council

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

Key Uncertainties

- Timeline of Implementation of Michigan Executive Directive 2007-23 (Promoting Environmental Justice)
- Inaction on renewable portfolio standards and energy efficiency requirements
- Funding for efficiency upgrades and job retraining
- Mass transit funding and implementation across regions
- Local land use reform but regional needs and opportunities

Additional Benefits and Costs

Health costs and needs among low-income and minority (high rates of asthma, lots of emergency room visits, etc., etc.)

Focus on maintenance. It's cheaper than replacement for buildings, infrastructure, etc., but total abandonment in recent decades could mean higher costs for replacement, etc.

Feasibility Issues

None identified at this time.

Status of Group Approval

Approved

Level of Group Support

Unanimous

Barriers to Consensus

None

Acronyms and Abbreviations

CH_4	methane
CO_2	carbon dioxide
ECM	energy conservation measure
ESCO	Energy Service Company
GHG	greenhouse gas
Gt	gig ton
HFC	hydrofluorocarbon
ICLEI	International Council for Local Environmental Initiatives
IMPVP	International Performance Measurement and Verification Protocol
LEED	Leadership in Energy and Environmental Design
MCAC	Michigan Climate Action Council
MCCP	Michigan Climate Challenge Program
MDCH	Michigan Department of Community Health
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
MEDC	Michigan Economic Development Corporation
MREP	Michigan Renewable Energy Program
N_2O	nitrous oxide
NGO	nongovernmental organization
NO_x	nitrogen oxides
PFC	perfluorocarbon
ppm	parts per million
SF_6	sulfur hexafluoride
TCR	The Climate Registry
USDOE	United States Department of Energy