



**MI Cross-Cutting Issues Technical Work Group
Summary List of Pending Policy Options**

	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2009–2025 (Million \$)	Cost Effectiveness (\$/tCO ₂ e)	Status of Option
		2015	2025	Total 2009–2025			
CCI-1	GHG Inventories, Forecasting, Reporting, and Registry	<i>Not Quantified</i>					Pending
CCI-2	Statewide GHG Reduction Goals and Targets	<i>Not Quantified</i>					Pending
CCI-3	State and Local Government GHG Emission Reductions (Lead-by-Example)	<i>Not Quantified</i>					Pending
CCI-4	Comprehensive Local Government Climate Action Plans (Counties, Cities, Etc.)	<i>Not Quantified</i>					Pending
CCI-5	Public Education and Outreach	<i>Not Quantified</i>					Pending
CCI-6	Tax and Cap/ Cap and Trade	<i>MCAC approved creation of new Market Based Policies TWG as lead for this option.</i>					Transferred
CCI-7	Seek Funding for Implementation of MCAC Recommendations	<i>Not Quantified</i>					Pending
CCI-8	Adaptation and Vulnerability	<i>Not Quantified</i>					Pending
CCI-9	Participate in Regional, Multi-state and national GHG Reduction Efforts	<i>Not Quantified</i>					Pending
CCI-10	Enhance and Encourage Economic Growth and Job Creation Opportunities Through Climate Change Mitigation						
CCI-11	Enhance and Encourage Community Development Through Climate Change Mitigation; Address Environmental Justice						

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. They 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 sources¹ 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 and forecast and GHG reporting functions, to be carried out by an existing agency such as ~~within~~ the Michigan Department of Environmental Quality (MDEQ) or a new entity within State government, such as an Office of Climate Change. Other agencies should assist in the process, ~~to be assisted by other state agencies~~ as needed.

Goals:

- Building on the existing State inventory process and other state of the art methods,² develop 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

¹ According to The Climate Registry, individual sources are defined either as “entities,” i.e. any corporation, institution, organization, etc. 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 IPCC Guidelines.

gas emissions for source- and consumption-based inventories.³ The Council recommends that MDEQ ~~the responsible agency~~ inventory the six Kyoto gases (CO₂, CH₄, N₂O, PFC, HFC, SF₆), and weight these gases according to global warming potentials reported by the IPCC.

- Follow the inventory protocol to prepare annual ~~consistent and complete production and consumption-based~~ inventories of emission sources and sinks that are consistent, complete and both production-based and consumption-based. The annual inventories should be compiled in a report at least once every 5 years and delivered to the Governor.
- Develop 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, 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.
- Develop a standardized protocol for the annual reporting of GHG emissions and sinks attributable to direct ~~and indirect~~ emissions (and certain indirect emissions)⁴ of entities operating within the state. It is recommended that:
 - ~~MDEQ~~ The protocol should follow reporting guidelines being developed by The Climate Registry (TCR),
 - Reporting ~~should happen~~ be conducted at the facility level,
 - Reporting ~~should~~ include ~~both direct and indirect~~ emissions as well as consumption of electricity and steam generated by consumption (for the purpose of calculating associated indirect emissions).⁵
 - ~~No less than 95 percent of~~ Direct emissions should be reported by entities should be retrieved from based upon a means of direct measurements whenever practical and/or required.
 - The reporting protocol ~~should~~ include guidelines for third party verification.

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 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 “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”

⁵ 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 “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”

- Facilities ~~should~~ have the opportunity to report emissions sinks, for possible use as offsets in a market-based GHG abatement program (such as CO₂ taxation or cap and trade).
- Facilities should have the opportunity to report verifiable “potential” emissions.
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- 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.
- Develop a standardized protocol by which to register emissions from sources. It is recommended that the State use TCR’s services for this purpose.
- Wherever possible, develop protocols to ensure harmonization with inventory, forecast, reporting and registry activities in other states and regions.

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. The definition of “significant” is left to MDEQ. However, no less than 95 percent of total emissions reported by entities should be retrieved from direct measurements.

Other:

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

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

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert additional text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Data Sources:

Quantification Methods:

Key Assumptions:

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

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, at least XX other states have established GHG reduction goals or targets.

The Intergovernmental Panel on Climate Change (IPCC) determined that atmospheric greenhouse gases (GHG) must remain below 400-450 ppm CO₂eq 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 gigatons (Gt) CO₂eq. 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 US needs to reduce its GHG emissions by about 80% by 2050 in order to stay within its estimated "safe" range of 160-265 GtCO₂eq for that same 50 year period. That comes to a 20% per decade reduction, or 2% per year.

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 US cumulative budget of 265 GtCO₂eq. 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.

In accordance with the 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.

Policy Design

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

Parties Involved: All parties statewide.

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

[Insert text as appropriate]

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

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

Policy Description

- Michigan and local government has 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. A small sample of these activities is listed below.
- The Michigan Department of Environmental Quality's participation on The Climate Registry Steering Committee.
- Member of the newly formed Midwestern Greenhouse Gas Reduction Accord
- The State of Michigan as a future member of the Chicago Climate Exchange
- 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.
- Executive Directive No. 2007-22 provides that state capital outlay projects for state and higher education buildings be designed and constructed in accordance with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System
- Clean Cities Programs support the use of alternative fuels for vehicles.
- Midwest Regional Carbon Sequestration Partnership, a USDOE sponsored partnership of states, universities and companies, is a pilot project to test the potential for sequestering carbon dioxide underground.
- Grand Rapids use of green power for the city's water and sewer system. Grand Rapids and Ann Arbor's replacement of their current street lights with LED fixtures.
- Michigan State University joining the Chicago Climate Exchange.

Many other examples can be found at:

<http://www.miclimatchange.us/ewebeditpro/items/O46F17163.PDF>

State and local 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. 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 and local governments will find ways to encourage and provide incentives for reducing GHG emissions by 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 respective jurisdictions consistent at a minimum with those established by the Michigan Climate Action Council – Final Report to the Governor Executive Order 2007-42. 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.

At this time, no one governmental agency oversees the on-going climate efforts of Michigan’s various agencies and departments. Such oversight should include reviewing the state and local agency performance, 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. Such an opportunity will occur with the formation of an Office of Climate Change (*or other such Office to be determined, including shared responsibilities among currently existing agencies*).

Goals:

Each state (and local government agency and colleges/universities) shall, in consideration of its current and projected building stock:

- 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 Office of Climate Change (or designated clearinghouse).

- Report the state agency (and local government agency and colleges/universities) progress toward its GHG reduction goals in buildings to the Office of Climate Change (or designated clearinghouse) on an annual basis.

Each state agency (and local government agency and colleges/universities) 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 Office of Climate Change (or designated clearinghouse).
- Report the state agencies' (and state (and local government agency and colleges/universities) progress toward its GHG reduction goals in transportation to the Office of Climate Change (or designated clearinghouse) on an annual basis.

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 which could also result in development that either protects or minimizes environment impacts and reduces additional contributions of GHGs. The following existing executive directives and other initiatives identified elsewhere in this document, should be continued and enhanced:

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.

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.

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.

2007-6: Create a plan to reduce FY2007 state electrical and other energy expenditures by 10 percent from FY2006 levels.

2006-06: "Promotion of Green Chemistry" for sustainable economic development and protection of public health.

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: Coverage should include all operations of all state agencies and local governments.

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

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 CO₂ emissions by 7% below 1990 baseline levels by 2012. (see note) Additionally cities and communities in Michigan are helping to develop and support additional climate change accountability programs such as with the Midwestern Governors Greenhouse Gas (GHG) Reduction Accord, The Climate Registry, The Michigan Renewable Energy Program (MREP), etc.

The state government; regional metropolitan councils, such as the Grand Valley Metro Council; [others TBD] 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 CO₂ 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 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 option(s) [TBD] and accompanying strategies. Similar to the U.S. Mayors Climate Protection Agreement, the MCAC recommends that local 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, but are not limited to, include:

- In-depth assessment of GHG inventories using a standardized recommended inventory process
- Urban planning and design such as the USGBC LEED 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, methane recovery, etc.
- Improved energy efficiency such as with the use of Energy Star equipment and overall building code improvements
- Increased use of LEED 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, anti-idling policies etc.
- 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 all local governments in Michigan. [specific milestones and goals to be determined (TBD)]

Timing: [Insert text as appropriate]

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

Implementation Mechanisms

Various regional workshops and summit meetings could be organized and held by the state government and the associations of local governments and communities to strengthen the successful implementation of climate change strategies. Development of a model plan by a consortium of state and local agencies and districts could help to facilitate implementation of this option as well as promote and communicate consistency of this option including the reduction of costs to local agencies, districts, and communities.

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

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 Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

Note: As of 5/30/08 the following 23 cities in Michigan have become signatories to the U.S. Mayors Climate Protection Agreement and include:

- 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
- Smithfield
- Southgate
- Sturgis
- Sutton Bay
- Taylor
- Traverse City
- Warren

To date over 800 City Mayors nationally have signed on to the U.S. Mayors Climate protection Agreement.

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 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 recommendations. Each item will be presented in light of current or previous efforts and provide details for implementation.

5.1 State Government Education and Outreach Actions (DB and DM)

The state should lead by example (i.e., walk the talk) regarding education and outreach.

Current or Previous Efforts (Proposal submitted to Power Fund?)

MCAC Recommendations (see items 5.1.1-5.1.5)

Establish an ongoing education and outreach committee or board charged with educating audiences (exactly who is the audience for this group?) regarding climate plan policies and to oversee those relating to education. This board would include ----- and 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 (non-profits, utility companies, etc.).

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. This represents a relatively low cost program with significant symbolic value and potentially high media visibility.

5.2 Policymakers (Legislators, Regulators, Executive Branch, Etc.) (DM)

Because implementation of climate actions hinges on policymaker's approval, well coordinated outreach and education to this constituency is critical.

Current or Previous Efforts (House Bills pending or passed related to GHG regulation)*MCAC Recommendations (see items 5.2.1 and 5.2.2)***5.3 Future Generations (DB)**

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

Current or Previous Efforts*MCAC Recommendations (see items 5.3.1-5.3.8)*

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.

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, -----.

Given the academic freedom of college professors, it may be difficult to impose a climate friendly curriculum in higher education. However, 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.

Each year _____ students in Michigan graduate with a degree in (building trades, etc....). The Climate Action Council recommends such programs introduce core competencies on climate change (energy efficiency in building design and construction, use of recycled materials, etc.).

5.4 Community Leaders and Community-Based Organizations (NC and DM)

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

Current or Previous Efforts

MCAC Recommendations (see items 5.4.1-5.4.12)

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. While this data is being collected, a host of other media relations activities can be deployed.

Current or Previous Efforts

MCAC Recommendations (see items 5.5.1-5.5.10)

Polling and focus group research will be extremely important to understanding 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.

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 state-wide 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 to keeping a high profile on climate change issues (5.5.4). Events might include regular press conferences from the governor or the release of new data 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 clearing house of climate change information and 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).

5.6 Industrial and Economic Sectors (Perhaps Stakeholders From the Venture Capital or Financial Sectors Would Be Helpful To Include Here) (NC)

Education and outreach to industrial 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.

Current or Previous Efforts

MCAC Recommendations (see items 5.6.1-5.6.7)

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 and provide information to Native American tribes.

Current of Previous Efforts

MCAC Recommendations (see item 5.7)

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

CCI-6. Tax and Cap Policies

Policy Description

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 funding for the implementation of MCAC recommendations.

Timing: Michigan 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, higher education, etc., shall be involved.

Other:

Implementation Mechanisms

Funding shall be administered through federal assistance and matching of funds.

In addition, Michigan will mandate private and public partnerships with state and local governments. Michigan will participate with private businesses to initiate and foster adequate financial alternatives for accomplishing adaptation and mitigation of the MCAC recommendations.

Related Policies/Programs in Place

[To be determined.]

Type(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per tCO₂e

Not applicable.

Key Uncertainties

There are uncertainties that exist with regard to the future growth rates of GHG emissions and the Michigan economy.

Additional Benefits and Costs

TBD.

Feasibility Issues

TBD.

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

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 critical 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 etc.
- 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, but not be limited to
 - *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 Disease*—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, crop and pest management, etc.

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; academic researchers at public and private universities and colleges in Michigan (and outside researches as needed); environmental/conservation organizations; natural resource-based industry leaders.

Other:

Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

Related Policies/Programs in Place

TBD.

Types(s) of GHG Reductions

CO₂:

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

Data Sources: [TBD by CCS on TWG approval]

Quantification Methods: [e.g., Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]

Key Assumptions: [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until MCAC moves to final agreement at meeting #5 or #6]

Level of Group Support

TBD – [blank until MCAC meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the MCAC]

CCI-9. Participate in Regional and Multi-State 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, and multi-province 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; and Michigan will consider the adoption of multi-state and province vehicle standards and cost-sharing.

The Governor and the Michigan legislature aggressively push for and shall continue to encourage Federal action to reduce GHG emissions. 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 the cost effective decrease of GHG emissions to the minimum of 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.

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 her administration staff should implement the legislative directive (see below) and initiatives pertaining to energy and environmental finance and policy. Accordingly, the committee chairs with jurisdiction as well as the ranking minority members should be informed of the relevant legislative progress.

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.

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

Policy Description

[Insert text as appropriate] MN- Successful state GHG reduction efforts are highly dependent on the active participation of the business community, particularly in the energy, agriculture, transportation, development, and manufacturing sectors. In Minnesota, there are many progressive corporations that are eager to participate in broad-scale efforts to reduce GHG emissions. To facilitate a strategic approach that has a significant impact, a statewide proactive business organization should be formed to promote energy efficiency and GHG reduction opportunities.

MD- There are numerous economic and business opportunities that can arise from implementing a comprehensive GHG reduction strategy for Maryland. A variety of job creation possibilities are implicit in the MCCC recommendations for new approaches to transportation, land use, green construction, recycling and reuse, and energy efficiency products and services. The state should work with public and private entities to identify, promote and finance these opportunities for economic development and job creation. The state should also work to keep existing green jobs in Maryland and prevent them from moving off-shore.

The growth of the “green industry” has the potential to benefit low- to mid-skill workers who can no longer depend on traditional manufacturing jobs. Since green jobs require applied technical skills, they generally pay decent wages. Unlike blue-collar jobs, many green-collar jobs require local employees and cannot be outsourced.

Another component of economic development is the promotion of buying locally produced foods, goods and products. Consumer support for the local economy helps sustain Maryland businesses, jobs, and tax base while reducing the consumption of fuel (and carbon dioxide emissions) in the transportation of foods and products over great distances.

AR: Successful state GHG reduction efforts are highly dependent on active participation of the business community, particularly in the energy, agriculture, transportation, development and manufacturing sectors. The intent of this policy is to encourage and facilitate the involvement of funding and investment sources, business interests, and entrepreneurs in pursuing business opportunities associated with GHG reductions and global warming solutions as quickly and as significantly as possible. The creation of a clearinghouse-like entity may make it possible to match technology developers and other climate solution entrepreneurs with necessary financing more effectively and expeditiously. As a result, a state’s ability to identify and secure early business opportunities associated with climate change may be enhanced, increasing its global competitive advantage and job creation within the state.

Potential funding sources include philanthropic organizations, high net worth individuals, or others interested in supporting innovative, environmentally effective market solutions. Recognizing that fortunes are likely to be made in the “new energy economy,” for-profit investors, pension funds, mutual funds, and/or venture capitalists may be looking to fund similar

business opportunities. Although technology entrepreneurs are often cited as offering potential global warming solutions, equally progressive solutions may lie in the fields of law, accounting, marketing, production, and even government relations and lobbying. The objective of this policy option is to leverage a state's specific talents for global warming solutions into securing the business opportunities and market advantages that well-supported "early bird" efforts are likely to reap in a carbon-constrained world.

IA: There are numerous economic and business opportunities that can arise from implementing a comprehensive GHG reduction strategy for Iowa. A variety of job creation possibilities are implicit in new approaches to transportation, land use, green construction, recycling and reuse, and energy efficiency products and services. The state should work with public and private entities to identify, promote and finance these opportunities for economic development and job creation. The state should also work to keep existing green jobs in Iowa and prevent them from moving out of state.

The growth of the "green industry" has the potential to benefit low- to mid-skill workers who can no longer depend on traditional manufacturing jobs. Since green jobs require applied technical skills, they generally pay decent wages. Unlike blue-collar jobs, many green-collar jobs require local employees and cannot be outsourced.

Another component of economic development is the promotion of buying locally produced foods, goods and products. Consumer support for the local economy helps sustain Maryland businesses, jobs, and tax base while reducing the consumption of fuel (and carbon dioxide emissions) in the transportation of foods and products over great distances.

Policy Design

[Insert text as appropriate]

Goals: [Insert text as appropriate]

Timing: [Insert text as appropriate]

Parties Involved: [Insert text as appropriate]

Other: [Insert text as appropriate]

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

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

[Insert text as appropriate]

Policy Design

[Insert text as appropriate]

Goals: [Insert text as appropriate]

Timing: [Insert text as appropriate]

Parties Involved: [Insert text as appropriate]

Other: [Insert text as appropriate]

Implementation Mechanisms

[Insert text as appropriate]

Related Policies/Programs in Place

[Insert text as appropriate]

Types(s) of GHG Reductions

Not applicable.

Estimated GHG Savings and Costs per MTCO_{2e}

Not applicable.

Key Uncertainties

[Insert text as appropriate]

Additional Benefits and Costs

[Insert text as appropriate]

Feasibility Issues

[Insert text as appropriate]

Status of Group Approval

Pending.

Level of Group Support

TBD.

Barriers to Consensus

TBD.