# Appendix K
# Cross-Cutting Issues
# Policy Recommendations

### Summary List of MCAC Recommendations

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

CCI = Cross-Cutting Issues; GHG = greenhouse gas; MCAC = Michigan Climate Action Council; $MMtCO_2e$ = 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 emission 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 emission trends built on inventories and projected economic trends. These forecasts are useful for identifying 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 that can be used to avoid disincentives to abate emissions prior to establishment of the reduction program.

A GHG *registry* enables recording of GHG emission 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 GHG emissions for source- and consumption-based inventories.[3] The Michigan Climate Action

[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. Environmental Protection Agency State Inventory Guidelines (e.g., Emissions Inventory Improvement Program [EIIP] Technical Report Series Volume 8, *Estimating Greenhouse Gas Emissions),* U.S. National Inventory Guidelines, and Intergovernmental Panel on Climate Change 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

Council (MCAC) recommends that the responsible agency inventory the six Kyoto Protocol 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 International Panel on Climate Change (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 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 be reported by entities based upon a means of direct measurement whenever practical and/or required;
    - The reporting protocol 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); and
    - Facilities 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 Michigan Department of Environmental Quality (MDEQ) according to the protocol. The definition of "significant" is left to the responsible agency to determine.

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Michigan Climate Action Council will leave the precise methodology for computing source-based and consumption-based emissions to the Michigan Department of Environmental Quality.

[4] According to The Climate Registry, *direct emissions* (also known as 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* (also known as 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."

- Utilize 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, 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 governments, 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 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 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 the University of Michigan submitted an inventory of Michigan 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), and
- IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (2003)

**Reporting and Registries**

- MDEQ participates on the Steering Committee for the development of TCR, a multi-state program designed to be an essential piece of infrastructure for the development of state and federal climate change programs. More than 30 states in the United States and Mexico, and several Canadian provinces have already signed on to join TCR. For more information about TCR, 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 TCR as "Reporters."
- Signatories of the Midwestern Regional Greenhouse Gas Reduction Accord have pledged to join TCR.
- Point sources regulated under the U.S. Environmental Protection Agency (EPA) Nitrogen Oxides ($NO_x$) Budget Trading Program and Acid Rain Program currently report $CO_2$ emissions to EPA.
- Michigan Public Act (P.A.) 451 of 1994, Part 55, Rule 324, Section 5522 of the Air Pollution Control Rules establishes provisions for emission reporting for facilities.
- Michigan P.A. 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 (AQD), 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 recommendation is needed.

## Feasibility Issues

None identified at this time.

## Status of Group Approval

Approved.

## Level of Group Support

Unanimous.

## Barriers to Consensus

None.

## CCI-2. Statewide GHG Reduction Goals and Targets

### Policy Description

In Executive Order No. 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 Regional Greenhouse Gas Reduction Accord, signed by Governor Granholm on November 15, 2007, establishes a requirement for MGA staff and appropriate state agency representatives to set regional GHG reduction targets that are consistent with member states' 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 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 20 other states have established GHG reduction goals or targets.

The Intergovernmental Panel on Climate Change (IPCC) determined that atmospheric GHGs must remain below 400–450 parts per million of carbon dioxide equivalent ($CO_2e$) 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 gigatons (Gt) of $CO_2e$. 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 $GtCO_2e$ for that same 50-year period. That comes to a 20% per decade reduction, or 2% per year.

The target years and GHG reduction goals included in this policy recommendation reflect a high level of uncertainty regarding the costs and benefits of implementing GHG reduction policies in Michigan. These goals have been examined in the second phase of the process and considered in combination with the results of the modeling and evaluation of the selected policy recommendations.

In accordance with the April 30, 2008, *Michigan Climate Action Council Interim Report* (Interim Report)[5], "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 recommendations detailed by the six Technical Work Groups (TWGs) (Agriculture, Forestry, and Waste Management, Energy Supply [ES], Residential, Commercial and Industrial, Transportation and Land Use, Cross-Cutting Issues [CCI], and Market-based Policies) include policies to reduce GHG emissions at low net cost, and identify opportunities for substantial net savings. Implementation of carefully crafted policy recommendations should bring significant economic benefits to the Michigan economy, by reducing fuel costs through efficiency measures, by reducing the export of capital

[5] See MCAC web site- www.miclimatestrategies.us

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.

## Policy Design

The MCAC originally proposed preliminary target years and GHG reduction goal ranges of 10%–20% for 2015 and 25%–35% for 2025 in the Interim Report. This was consistent with helping Michigan stay just below the upper limit of the U.S. cumulative budget of 265 $GtCO_2e$.

The MCAC has since modified the preliminary target year and GHG reduction goals to be consistent with the goals being considered by the Midwestern Governors Association (MGA). They are presented in the Table K-2.1 below. The policies recommended by the MCAC appear to be able to achieve a 20% reduction below 2005 levels by 2020. To do so however, it will be necessary for the state to move expeditiously forward with near–term implementation of the policy initiatives outlined in this MCAC Final Report. This includes the institution of formal mechanisms to monitor and verify GHG reduction progress and to periodically adjust reduction goals and strategies when needed.

**Goals:**

**Table K-2.1. MCAC-recommended GHG reduction goals**

| Year % | Reduction from 2005 Levels |
|---|---|
| 2005 | Baseline |
| 2020 | 20% |
| 2050 | 80% |

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

**Timing:** 2009–2020.

**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 recommendations may also depend on implementing or authorizing executive action or legislation. All such directives or legislation should contain accountability measures for tracking, verifying, and measuring progress toward meeting the specified goal and targets, and should include tracking other information important to policymakers and the public.

A number of standards that define the process for measuring GHGs should be considered for tracking reductions. Two of the most commonly used are:

- The *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (Revised Edition), issued by the World Business Council for Sustainable Development and the World Resources Institute.
- International Standard, ISO 14064-1 Part 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 will develop specific tracking and verification mechanisms for measuring actual progress toward 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 emission trading schemes (and other government-led policies); and
- 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 technical assistance, education, and information; a state-specific *Guide to Energy Performance (and Contracting With ESCOs)*; financing, opinion measurement, and recording and verifying savings.

The International Performance Measurement and Verification Protocol establishes standards for measurement and verification and allows building owners, ESCOs, and financiers of building energy efficiency projects to quantify energy conservation measure 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 should publish these results biennially. The progress achieved (or lack of adequate progress) should be used to educate the public and policymakers about 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 section for CCI-1 (GHG Inventories, Forecasting, Reporting and Registry).

Executive Order No. 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 reducing 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 the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards in new construction, and to take other measures to reduce energy use and improve energy conservation.

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

Michigan's legislature recently passed a package of energy-related bills (Senate Bill [S.B.] 213, S.B. 1048, and House Bill [H.B.] 5524) that create a renewable portfolio standard (RPS), the Michigan Energy Conservation Fund, energy optimization plans (EOPs), 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

The six types of gases included in the U.S. Greenhouse Gas Inventory: $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$.

## Estimated GHG Reductions and Net Costs or Cost Savings

Not applicable.

## Key Uncertainties

Whether implementation of the package of recommendations in this *Michigan 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 recommendation along with the accountability and tracking system.

## Feasibility Issues

None identified at this time.

## Status of Group Approval

Approved.

## Level of Group Support

Unanimous, except for one abstention.

## Barriers to Consensus

None identified.

## 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 ongoing and future efforts can provide practical and working examples of what can be done by nongovernmental organizations (NGOs), academic institutions, and even individual citizens to reduce GHGs. Much more effort is planned and should be carried out to further improve Michigan's 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, nonprofit organizations, and the private sector to reduce emissions and increase energy efficiency. For example, the state of Michigan is a major consumer of electricity. 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 must 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 in its Final Report to the Governor. 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 and local governments and academic institutions. This will help set an example for industry and the general public and build expectations of continued leadership for a “greener” standard of living. For example, actual governmental GHG emission reductions, and their respective measurements through monitoring, are easier to determine if governmental units disaggregate at the agency, department, facility, and building levels 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, local, and tribal governments and academic institutions will develop additional incentives for energy efficiency and GHG reductions. For example, government and academia should 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 ongoing climate efforts of Michigan's various agencies, departments, and tribal governments. Such coordination should include reviewing state, local, and tribal government activities and providing direction, guidance, resources, shared approaches, and recognition to agencies or departments and their employees who are working to reduce government 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:**

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 with the statewide GHG reduction goals established in the Michigan Climate Action Council – Final Report to the Governor.
- Provide the plan to the appropriate state agency.
- Report the state and local government agency, school district, and college/university progress toward their GHG reduction goals in buildings to the appropriate state agency on an annual basis in accordance with established reporting protocols.

Each state and local government agency, school district, and college/university will, 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 their 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.

Each tribal government and tribal government agency, in consideration of its current and projected building stock, will take the actions 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 environmental 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: M**DEQ 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 will communicate to the public, policymakers, businesses, and local, state, federal, and tribal governments regarding the effects and success of various policy recommendations 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 government agencies involved in GHG reductions efforts. Some ongoing GHG reduction options and opportunities were discussed in CCI-2 above and outlined in the Related Policies/Programs in Place section of this CCI policy recommendation.

The designated lead agency will also serve as a focal point for public education and outreach to market incentives, and provide assistance and other resources offered by state government to help all interested parties in meeting the state's GHG reduction goals. The designated lead agency will 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, nongovernment, 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 using a wide variety of methods that actively engage the stakeholders meaningfully, such as:
  - Planning events.
  - Participating in trade shows and conferences.
  - Conducting studies and analysis to assess the potential of alternative technologies for GHG reduction and energy efficiencies.
  - Providing training workshops on integration of GHG reduction and 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.
  - Using public service announcements, other print, TV, or Internet media-related methods.
  - Facilitating GHG reduction performance reviews and recognition of agency progress.
  - Maintaining a Web site 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.
  - Serving as a liaison with other climate action-based groups around the state and region.

The designated lead agency will coordinate these efforts with other public education and outreach activities contained in CCI-5, including the Climate Challenge, and other policy recommendations referenced within the other MCAC TWGs. 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 MDEQ’s participation on the TCR Steering Committee.
- Michigan's membership in the newly formed Midwestern Regional Greenhouse Gas Reduction Accord.
- The Michigan Forest Carbon Offset and Trading Program pilot project.
- Michigan’s ongoing efforts to attract green energy companies.
- Local conservation districts' establishment of tree plantations.
- Property tax advantages to forest landowners for appropriate sustainable management to provide additional carbon sequestration.
- Michigan Department of Labor and Economic Growth’s (MDLEG's) development of the Biomass Energy Program and Michigan Department of Natural Resources’ (MDNR's) 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.
- The Michigan Wind 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 U.S. Department of Energy (DOE)-sponsored partnership of states, universities, and companies, is a pilot project to test the potential for sequestering $CO_2$ 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 light-emitting diode (LED) fixtures.
- Michigan State University's joining the Chicago Climate Exchange.
- Executive Directive No. 2005-4: "Energy Efficiency in State Facilities and Operations": energy use reductions of 10% by 2008 and 20% by the end of 2015, compared to energy use fiscal year (FY) ending September 30, 2002.
- Executive Directive No. 2007-6: Create a plan to reduce FY 2007 state electrical and other energy expenditures by 10% from FY 2006 levels.
- Executive Directive No. 2006-06: "Promotion of Green Chemistry for Sustainable Economic Development and Protection of Public Health."
- 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, improve energy efficiency in the state motor vehicle fleet, include energy efficiency standards in purchasing, meet LEED standards in new construction; and take other measures to reduce energy use and improve energy conservation.
- Executive Order No. 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.
- The Midwestern Regional Greenhouse Gas Accord, signed by Governor Granholm on November 15, 2007, establishes a requirement for MGA staff and appropriate state agency representatives to set regional GHG reduction targets that are consistent with member states' targets.
- Michigan's legislature recently passed a package of energy-related bills (S.B. 213, S.B. 1048, and H.B. 5524) that create an RPS, the Michigan Energy Conservation Fund, EOPs, net metering, IRP, and numerous other provisions to be required of utilities and the MPSC.
- See the Related Policies/Programs in Place for CCI-1 (GHG Inventories, Forecasting, Reporting, and Registry).

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

## 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

Unanimous.

## 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 900 cities nationwide—are also signatories to the U.S. Mayors Climate Protection Agreement, with 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 Regional Greenhouse Gas Reduction Accord, TCR, and the Michigan Renewable Energy Program.

The state and tribal governments; regional metropolitan councils, such as the Grand Valley Metro Council; Michigan Municipal League; and others could all help create awareness about climate change issues and lead by example in developing climate change programs that are coordinated with the MCAC. 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 Web site 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 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 GHG reductions as well as set future state GHG reduction goals. The MCAC further recommends that these locally adopted plans be used to stimulate equivalent GHG reduction programs by the private sector and nongovernmental agencies in each community by establishing partnerships and collaborative efforts. These private- and public-sector activities can be considered economic and business development opportunities in concert with policy recommendations 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 the 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)-Local Governments for Sustainability's *Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments* and *International Local Government GHG Emissions Analysis Protocol*.

- Sustainable urban planning and design, such as the LEED or similar sustainability certification guidelines for neighborhood development.
- Land-use recommendations, such as the need to preserve open space, and the creation of walkable, compact, live and work communities.
- Transportation recommendations, such as increased public transit, bike trails, and carpooling 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, using 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 green space 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.
- Enhanced awareness and understanding of climate change strategies and implications in public schools, academic institutions, and the general public.

**Goals:** Adoption of community climate action plans by a significant number of local governments in Michigan.

**Timing:** As soon as feasible given available resources.

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

Note: In Michigan as of August 1, 2008, the following 23 cities have become signatories to the U.S. Mayors Climate Protection Agreement:

Ann Arbor
Battle Creek
Berkley
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

A number of programs and activities can be accomplished in concert at a state, regional, tribal, and local level to ensure the success of the *Michigan Climate 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 policy recommendations. Additional issues surround the implications regarding S.B. 213, which 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 grassroots neighborhood, community, township, and county levels.

## 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 at least seven specific audiences in Michigan according to policy recommendations made by members of the MCAC. 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 nonprofit 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 provides 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.

The MCCP will 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. MDEQ, working in conjunction and consultation with other state agencies, will develop and launch the MCCP and will 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 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 the 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 overseeing those relating to education. Include a provision to establish age-appropriate testing on the science and economics of climate change. This committee or board would include representatives from Michigan's public 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 nonprofit 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)

Educate policymakers on climate action recommendations, scientific and technological advances, and progress toward 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 the 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 the CCI TWG Catalog of State Policy Option).*

One of the best ways to disseminate knowledge about climate change mitigation is through Michigan's education system. The process would begin by organizing groups of educators to identify, assemble, and employ climate change curricula appropriate to age groups. It should be noted, however, that 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 curricula 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 addressing 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. Implementing renewable energy and energy efficiency measures 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 the CCI TWG Catalog of State Policy Options).*

## 5.5 General Public

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 the 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 (item 5.5.3). Focus group research in particular could be used for developing a branding campaign (item 5.5.5) and for framing legislative issues in the media. Funding for this research could come through 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 executed on a large scale through presentations at statewide media conferences, like the Great Lakes Broadcasting Expo sponsored by the Michigan Association of Broadcasters (item 5.5.1). These discussions should also help facilitate the development and dissemination of public service announcements (item 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 (item 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 the mass media and the general public (item 5.5.6). In addition to providing climate change information, the site could provide updates on state and federal legislative action. This site could also support outreach efforts by companies seeking to enhance awareness of cost-saving activities for consumers (items 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 any one of the six target audiences identified by the CCI TWG.

- 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 not only to provide information but also 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 and waste management. 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 home or business owners.

Current or Previous Efforts

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

### 5.7 Tribal Governments

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 nonprofit 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 MCAC 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 5-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 nonprofit 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 recommendation 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. Accordingly, Michigan will position itself to successfully compete for federal and international assistance and matching funds for adaptation to and mitigation of climate change. 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 section, below.

**Timing:** The state will 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:** None.

### Implementation Mechanisms

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

- State revolving funds established to provide affordable access to credit,
- Federal and/or Midwestern 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 S.B. 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 the *Michigan Climate Action Plan* recommendations.

## Additional Benefits and Costs

Estimates of staffing and costs to implement this recommendation are 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 affecting and will affect the natural resources and natural resource-based economic activity in the state. Additional attention, research, and funding are 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 Michigan's 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 and efforts should be made to coordinate and consolidate these information-gathering activities.

### 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 wildlife and fisheries. During 2009 the MCAC 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 ongoing 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. The team's task would be 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; and 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 periodically assessing 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 a 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.
- 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 MCAC's scoping document should be developed for submittal to the Michigan agencies during 2009.

**Parties Involved:** MDNR, MDEQ, Michigan Department of Agriculture (MDA), and MDLEG; U.S. Fish and Wildlife Service, U.S. Department of Agriculture (Natural Resources Conservation Service and Forest Service), and EPA; 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 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, 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 section below. Integration of the ongoing efforts would then need to be considered.

Finally, if the funding can be arranged, 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

Many completed or ongoing studies be useful source of information. Some examples include:

- Midwestern Regional Greenhouse Gas Reduction 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

A key concern is whether adequate funding can be identified to develop the comprehensive vulnerability and adaptation strategies.

Another issue is 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 affects 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 buildings, transportation, land use, agriculture, forestry, and waste management.

The current initiatives include the state's membership in the Midwestern Regional Greenhouse Gas Reduction Accord, whereby the member governors and Canadian premier agreed to establish a regional GHG reduction program with targets and time frames 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 MDEQ's participation on the TCR Steering Committee. The multi-state TCR 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 a protocol for measuring GHG emissions. 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 6% reduction in GHG emissions from 2000 levels by 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's 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 (unless a national system supersedes this need).

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 MCAC. The reduction 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 GHGs.

**Timing:** Beginning in 2009, the Governor 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 oversight of pertinent regional and federal climate initiatives as they impact Michigan, to ensure that the 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:** None.

## Implementation Mechanisms

Michigan will continue its proactive engagement in the Midwestern Regional Greenhouse Gas Reduction 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 and others, such as the Council of Energy Resource Tribes.

Michigan should also further investigate and, if it is determined to be in the state's best interest, join the TCR and CCX.

## Related Policies/Programs in Place

- As part of the Midwestern Regional Greenhouse Gas Reduction Accord, the 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 $CO_2$ and other GHGs.

- 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; improve energy efficiency in the state motor vehicle fleet; include energy efficiency standards in purchasing; meet LEED standards in new construction; and take other measures to reduce energy use and improve energy conservation.
- Michigan's legislature recently passed a package of energy-related bills (S.B. 213, S.B. 1048, and H.B. 5524) that create an RPS, the Michigan Energy Conservation Fund, EOPs, net metering, IRP, and numerous other provisions to be required of utilities and the 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 recommendation, 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 GHG emissions. Michigan is already home to two of the world's leading solar power manufacturers, and over 25 businesses provide components for the growing commercial wind energy industry. Investors in the clean technology 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 government policies will be necessary to maximize investment in Michigan.

### Policy Design

Members of the MCAC recommend the state implement robust measures to retain existing clean tech business and attract new investment. The MCAC 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 Mechanisms section of this policy recommendation.

Motivators are also needed to encourage partnerships between green energy companies and more traditional (or retooled) manufacturers. For example, Michigan'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 spaces where plug-in vehicles can be recharged while at work. It is extremely important that plug-in hybrids be seen not only as a "vehicle" for energy independence, but also as a means of reducing GHG emissions. Similarly, incentives could be offered to utility companies that partner with on-site storage manufacturers to increase distributed on-site power. 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 Michigan's economy to import carbon-based fuels and would 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, standardize zoning requirements, create 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. Funding and support should include the advancement of fuel cell research and development (R&D), coal gasification research, carbon capture and sequestration,(CCS), wind, solar, and geothermal energy, and other energy alternatives. If possible, liability issues associated with carbon sequestration pilot projects should be resolved to help stimulate the feasibility of this technology option. Current action in this area is encouraging and includes MDEQ, MDNR, and the Attorney General mapping out regulatory matters pertaining to carbon capture, sequestration, and reuse (CCSR) to identify appropriate actions to address such issues as landowner rights, liability (both short- and long-term), revenue streams, environmental impacts, and others as identified.

*4. Utilize 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. These sectors have been identified through 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.

- Michigan is uniquely positioned for significant wind generation potential. The American Wind Energy Association (AWEA) nationally ranks Michigan at #14 in terms of wind potential and #4 in terms of industrial capability to manufacture, innovate, and utilize wind turbine products. Michigan is one of the top 10 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 a world-class manufacturing environment featuring high-quality and cost-competitive manufacturing practices, integrated supply chains focused on innovation, and a workforce that includes thousands upon thousands of skilled engineers, technicians, and manufacturing professionals.
- Michigan ranks second overall in *total* industrial 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 crossover 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 as a Midwest manufacturing state, and is also the gateway to Ontario's strong manufacturing base and wind power developments.
- Opportunity to partner in efforts involving Michigan's 38,575 square miles of Great Lakes freshwater surface area, which have an estimated offshore wind generation potential of 44,000 megawatts (MW).
- Michigan's unique geologic features may present an opportunity to employ CCS, as outlined in the Energy Supply (ES) TWG recommendations ES-6 and ES-8. DTE Energy is already conducting a pilot CCS project.
- Collaboration and membership in the Consortium for Advanced Manufacturing of Alternative & Renewable Energy Technologies, 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;
    - Offering business and supply chain support; and
    - Providing a state government that emphasizes renewable energy as a critical economic driver and aligns government departments to continuously support and improve Michigan's energy efficiency.

*5. Protect Michigan's Water*

Michigan should protect and maximizing the sustainable and affordable use of its water 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 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. Invest in Walkable Neighborhoods and Transportation Mode Choices*

Michigan should 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 the state's core communities is a major barrier to growing Michigan's 21st century economy. Mass transit in states like Oregon and Colorado has 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 the 2003 Michigan Land Use Leadership Council Report called *Michigan's Land, Michigan's Future*, 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.
- Reducing black soot emissions from diesel-emitting mobile sources by creating programs to retrofit engines with diesel particulate filters.

*7. Support a Diverse Agricultural Base*

The Great Lakes region may incur relatively manageable impacts from climate change, since it is 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 2003 Michigan Land Use Leadership Council Report called *Michigan's Land, Michigan's Future*]
- Reduce air and water pollution and provide habitat protection for better hunting, fishing, and other recreational activities.
- Create incentives to promote reforestation and afforestation.
- 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. Maintain Traditional Support for Michigan's Public Research Universities*

Traditional support for Michigan's excellent public research universities 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. The state 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. Encourage and Facilitate Michigan's Strong Social Infrastructure*

Michigan should encourage and facilitate its strong social infrastructure with its historic participation by diverse populations in educational institutions, labor unions, business organizations, tribal and local governments, religious communities, nonprofit organizations, 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.

## Implementation Mechanisms

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

### Multi-Year Extension of the Federal Production Tax Credit 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. Federal renewal of the PTC will enable Michigan to capitalize on creating jobs in the emerging renewable energy industry, and 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 the Michigan congressional delegation should urge Congress to renew the PTC.
- The Midwestern Regional Greenhouse Gas Reduction Accord should speak to state legislatures, members of the media, and the AWEA to address renewing the PTC on a long-term basis.

### Expansion of Federal Clean Renewable Energy Bonds

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 December 30, 2008.

### Promotion of Coordination Across States and Assess Policy Mechanisms

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 feed-in tariffs, rate-making incentives, and other financing options for increasing renewable energy in Michigan.
- Investigate and make recommendations about how subsidies and/or incentives for oil and gas could be transferred to renewable energy resources to increase development in the clean energy sector.
- Provide direct state financial incentives (grants, tax credits, loan guarantees, and performance guarantees). Michigan should establish incentives the same as or complementary to those in the Federal Energy Policy Act 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 and 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.
- Create a regional "turbine pool" 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 MEDC'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 businesses, 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 rates, fixed rates, streamlined permitting and siting, and 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.
  - Establishment of foreign trade zones in Michigan, which may benefit clean technology manufacturers importing parts or products from overseas and allow for the deferral or elimination of import tariffs.

- Support the two parallel implementation mechanisms stated in the Energy Supply TWG policy recommendations, which focus on CCSR and advanced fossil fuel technology. These two policy recommendations 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 MGA Renewable Electricity and Advanced Coal with Carbon Capture Advisory Group's Policy Template Options.

- Implement a comprehensive, targeted marketing strategy to 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 MDLEG should perform a workforce analysis of the education and 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, and should identify opportunities for collaboration. These two training and workforce initiatives could include such options as:
    - Coordination of state/local workforce development and 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 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 the 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 that include 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 language for local governments to use to amend their zoning ordinance. The state should enact legislation establishing onshore and offshore wind energy siting standards that include land use and right-of-way considerations, local zoning ordinances, condemnation procedures, minimum setback distances of turbine towers and related support equipment from residences and public roads, off-site property boundaries, etc. Other crucial offshore issues should also be considered, such as avian, wildlife, and aesthetic considerations, shipping, and lake ecology.
- Catalog current university research efforts and educational programs related to renewable energy.
- Catalog training programs available related to workforce development programs.

## Related Policies/Programs in Place

### Renewable Portfolio Standard and 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. Michigan’s legislature recently passed a package of energy-related bills (S.B. 213, S.B. 1048, and H.B. 5524) that create an

RPS, the Michigan Energy Conservation Fund, EOPs, net metering, IRP, and numerous other provisions to be required of utilities and the MPSC. The package had broad support from both major political parties, environmentalists, the major Michigan utilities, and business leaders. IRP 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:

- S.B. 213 includes an RPS, creates the Energy Conservation Fund, and requires utility energy optimization plans, wind energy resource zones, and net metering. The RPS will be 10% by 2015. Energy optimization credits and advanced cleaner energy credits can be used to partly 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 S.B. 213 is available at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/Senate/pdf/2007-SNB-0213.pdf.
- H.B. 5524 amends P.A. 3 of 1949, P.A. 141 of 2000 (Michigan Customer Choice and Electricity Reliability Act) and designates the MPSC, an autonomous entity within MDLEG, to perform a number of actions described in detail in the bill. The enrolled version of HB. 5524 is available at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/House/htm/2007-HNB-5524.htm.
- S.B. 1048 would amend the Income Tax Act to allow individual taxpayers who purchased and installed certain qualified home improvements for their principal residence during the tax year to claim an income tax credit equal to 10% of the amount they 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 EPA and DOE ENERGY STAR energy efficiency guidelines, including windows, doors, insulation, high-efficiency heating and cooling equipment, and any appliances, such as dishwashers, clothes washers, and refrigerators. The enrolled version of S.B. 1048 is available at: http://www.legislature.mi.gov/documents/2007-2008/billenrolled/Senate/htm/2008-SNB-1048.htm.

**Centers of Energy Excellence**

Governor Granholm signed legislation on July 8, 2008, creating the 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 of up to $45 million for COEE.

The MEDC has formed several “cluster teams” in a number of strategic industry sectors well suited for growth in Michigan, including 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 has formed a unique partnership with a Swedish company that turns wastewater sludge into biogas.

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

- The Michigan Strategic Fund 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 is required to operate a Center of Energy Excellence.
- The funds may 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; and activities of a Center of Energy Excellence, including, but not limited to, workforce development and technology demonstration.

Under the new COEE program:

- **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 wastewater 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 University and Michigan Tech University will focus on improving the supply chain for woody biomass feedstock.

More information about these Centers of Excellence is available at:
www.michiganadvantage.org/21CJF

**SmartZones**

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 among universities, industry, research organizations, government, and other community institutions, growing technology-based businesses and jobs.

One of the 12 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 (PV) 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 SmartZone 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 Jobs 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 nonprofit 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 provide incentives to 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 PV 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.

### Michigan NextEnergy Authority

The Michigan NextEnergy Authority (MNEA) 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 the alternative energy industry. One of MNEA's many tasks is to match local firms with outside clean technology companies and investors. For example, MNEA has created an inventory of 35 wind turbine component part manufacturers and over 200 existing manufacturers interested in expanding into the turbine component space, and often coordinates match-making 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 MNEA 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.

**Michigan Department of Energy, Labor, and Economic Growth**

The Governor recently consolidated all activities related to the energy sector into the renamed MDLEG. The new department will include the No Worker Left Behind green jobs training initiatives; Michigan's new energy efficiency building code; the MPSC and energy efficiency programs; the Office of Sustainability; the Renewable Fuels Commission; and the Michigan State Energy Office. It will work in tandem with the MEDC's tax incentives and attraction efforts, and will be strategically partnered with MNEA to further the state's energy agenda. MDLEG will facilitate the development of advanced energy technologies and will assume responsibility for activities related to the development of renewable fuels and "greening" programs like LEED, which assists communities in fostering environmentally sustainable construction. MDLEG's charge will include promoting the use of renewable energy, the development of advanced energy technologies, and the implementation of energy efficiency measures in the state.

Program objectives are advanced through a variety of services, including information dissemination, technical and financial assistance, and demonstration projects. EPA is the primary funding source for Energy Office activities. Some of the assistance includes:

- **Solar and Wind Energy Outreach Grants**: These competitive grants are available to nonprofit or public organizations to conduct outreach projects in Michigan to promote and market solar and wind energy.
- **Large-Scale PV Demonstration Project Grants:** These grants may be available to public and nonprofit organizations for the installation and demonstration of new PV systems with a minimum capacity of 10 kilowatts.
- **Community Energy Project Grants:** These grants may be available to nonprofit and public organizations. Funding categories have included solar and/or wind energy education, bioenergy/biofuels/bioproducts education, green commuting projects, green building projects, and statewide energy conferences.
- **Energy Efficiency and Renewable Energy Outreach Grants:** These grants may be available to nonprofit or public organizations for marketing and promotion efforts. Funding categories have included solar energy, wind energy, ENERGY STAR products, and ENERGY STAR homes.
- **E85 Infrastructure Conversion Incentive Program:** This 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 E85 fuel (a fuel blend of 85% ethanol and 15% gasoline) to their motorists.
- **Biofuel Signage Rebate Program:** This program offers service stations a rebate to cover 50% of the cost needed to post signs along the freeway displaying the availability of E85 or B20 fuel (a fuel blend of 20% biodiesel and 80% gasoline) at their stations.

**Grant for Cutting-Edge Plug-In Hybrid Vehicle Study**

On May 8, 2008, the Michigan's Public Service Commission announced a $5,000,000 grant for a partnership between University of Michigan, General Motors Corporation, and DTE Energy. This partnership will study plug-in hybrid electric vehicles (PHEVs) as a Michigan economic

development catalyst, the interface between vehicles and utilities, and the environmental and electric utility system impacts of PHEVs.

**Michigan Biomass Energy Program**

This program 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.

**Low-Income and Energy Efficiency Fund**

Administered by the MPSC, this fund provides grants for the implementation of energy-efficiency projects and renewable-energy projects in the state.

**Agricultural Innovation Fund**

Also known as the Julian-Stille Value-Added Agricultural Development Fund) and administered by the Michigan Department of Agriculture, this fund supports 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**

MEGA high-tech job creation tax credits may be awarded against the Michigan Single Business Tax for high-tech companies looking to expand or locate in Michigan rather than another state. To be eligible, companies must be involved in technology fields devoting 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.

**Ethanol & Biodiesel Matching Grant Program**

Created by P.A. 274 of 2006, this program provides incentives to service stations and bulk plants to convert existing or create new fuel delivery systems for the distribution of E85 fuel and biodiesel blends.

**Midwest Regional Carbon Sequestration Partnership**

The MDEQ Office of Geological Survey has been working with the MRCSP, a DOE-sponsored partnership, on a pilot project to test the potential for sequestering $CO_2$ underground. The MRCSP is made up of seven states, the federal government, universities (Western Michigan University and others), and many companies. The MRCSP is one of seven partnerships nationally. Together the seven partnerships are testing the potential for sequestering $CO_2$ in the following ways: terrestrial sequestration, brine formation sequestration, and oil and gas field sequestration. More information about the MRCSP is at: www.mrcsp.org.

**Clean Cities Program**

Clean Cities is a government-industry partnership sponsored by DOE's Vehicle Technologies Program. Clean Cities' mission is to reduce petroleum consumption in the transportation sector by promoting the use of alternative fuel vehicles and alternative fuels. Participating Michigan partnership communities, which include the greater Detroit, Lansing, and Ann Arbor metropolitan areas, are part of 90 local coalitions and 5,700 stakeholders nationwide. Similarly, a $24,500 matching grant was recently awarded to the West Michigan Strategic Alliance to

establish a Clean Cities Coalition. The regional initiative's focus will be developing local markets for alternative transportation fuels, refueling sites, and clean vehicle technologies and supporting alternative fuel corridor growth in West Michigan.

**Alternative Energy Research and Development**

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;
- The University of Michigan's Michigan Memorial Phoenix Energy Institute, Transportation Energy Center, and Hydrogen Energy Technology Laboratory;
- 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;
- Michigan Technological University's Advanced Power Systems Research Center, Power and Energy Research Center, and Sustainable Futures Institute; and
- Grand Valley State University's Sustainability Initiative and the MAREC.

## 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 Michigan legislature, Governor. and others. The successful passage of these needed actions and their implications are 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 recommendation 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 recommendation, beyond any potential passage by the legislature.

## Feasibility Issues

None identified at this time.

## Status of Group Approval

Approved.

## Level of Group Support

Unanimous.

## Barriers to Consensus

None.

## 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, including increases in extreme weather events and droughts, as well as 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 affected 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 No. 2007-23: Promoting Environmental Justice, and should ensure that organizations currently working with affected 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 affected by economic obsolescence and other changes.

Meanwhile, taxation and pricing strategies specifically designed to limit or reduce GHG emissions, including cap-and-trade programs 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 in which 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: M**eeting these various needs will become the responsibility of various departments and agencies within federal, state, tribal, and local governments, NGOs, and others, including the MDEQ 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 the state's congressional delegation.

## Implementation Mechanisms

1. *Collaborative Planning Process*
   A. The state should fully implement Michigan Executive Directive No. 2007-23: Promoting Environmental Justice. MDEQ is directed to develop and implement a state environmental justice plan and assemble an Environmental Justice Advisory Committee (see B below). Plans should incorporate greater levels of interdepartmental cooperation (Michigan Department of Transportation [MDOT], Michigan Department of Community Health, MEDC, MDNR, etc.) on environmental justice and climate change response (see C below). The advisory committee 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 among state agencies, businesses, community groups, and transportation users to better coordinate resources and facilitate equitable development of climate response policy. This committee should consist of stakeholders and an interdisciplinary cross-section of relevant government agency staff, and should be charged with addressing the 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 such issues as green job retraining for low-skilled workers, infrastructure needs, and continuous process improvement.

C. The state should 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. 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 reduce disproportionate impacts on minority and low-income communities. 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 nontraditional community members should include the active recruitment of all stakeholders in pre-project "visioning" discussions. This should include direct outreach and consultation with representatives of 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 on proposed projects, including interactive design charettes as well as both open-house and town hall-style meetings that allow for 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 "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.* At the request of the Environmental Justice Advisory Committee, the state should 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 most 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. The state should 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 that 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 the benefits to various populations. This analysis should be published prior to implementation, and should be inclusive of both economic and noneconomic considerations.

3. *Opportunities for Change*

A. The state should invest in clean energy manufacturing and job retraining.

- 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 (LCC), 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. The state should review programs to ensure it achieves maximum efficiency from 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 businesses 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 in areas with options for transit, walking and biking, carpooling, etc.); and
- Reuse and updating of already existing housing, schools, and infrastructure (Michigan Land Use Leadership Council, 2003).

## Related Policies/Programs in Place

- Michigan Executive Directive No. 2007-23: Promoting Environmental Justice.
- 21st Century Jobs Fund.
- No Worker Left Behind Initiative.
- Michigan State Housing Development Authority Urban Revitalization Program (Cool Cities/Cities of Promise).
- Green jobs programs at 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 No. 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, numerous emergency room visits, 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.