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**Residential, Commercial, and Industrial (RCI)  
Technical Work Group**

**Summary List of Pending Priority Policy Options for Analysis**

|        | Policy Option  | GHG Reductions (MMtCO <sub>2</sub> e) |      |                 | Net Present Value 2009–2025 (Million \$) | Cost-Effectiveness (\$/tCO <sub>2</sub> e) | Level of Support |
|--------|--|---------------------------------------|------|-----------------|--|--|------------------|
|        |  | 2015                                  | 2025 | Total 2009–2025 |  |  |                  |
| RCI-1  | Utility Demand-Side Management for Electricity, Natural Gas, Propane, and Fuel Oil                   | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-2  | Existing Buildings Energy Efficiency Incentives, Assurances, Certification and Financing             | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-3  | Regulatory (PSC) Changes to Remove Disincentives and Encourage Energy Efficiency Investments by IOUs | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-4  | Adopt More Stringent Building Codes for Energy Efficiency  | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-5  | Michigan Climate Challenge and Related Consumer Education Programs                                   | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-6  | Renewable Energy Systems Implementation  | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-7  | Promotion and Incentives for Improved Design and Construction in the Private Sector                  | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-8  | Net Metering for Distributed Generation  | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-9  | Training and Education for Building Design, Construction and Operation                               | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |
| RCI-10 | Energy-Savings Sales Tax   | <i>Not Yet Quantified</i>             |      |                 |  |  | Pending          |

GHG = greenhouse gas; MMtCO<sub>2</sub>e = million metric tons of carbon dioxide equivalent; \$/tCO<sub>2</sub>e = dollars per metric ton of carbon dioxide equivalent.

Note: The numbering used to denote the above pending priority policy options is for reference purposes only; it does not reflect prioritization among these important draft policy options.

## RCI-1. Utility Demand-Side Management (DSM) for Electricity, Natural Gas, Propane and Fuel Oil

### Policy Description

This option focuses on increasing investment in electricity and natural gas demand-side management (DSM) programs through programs run by the investor owned, municipal and co-operative utilities, as well as energy service companies (ESCOs), large customers, or others, in order to meet the goal of overall reduction in energy consumption.

Decreasing consumption will have immediate impacts on greenhouse gas emissions. DSM activities may be designed to work in tandem with other recommended strategies that can also encourage efficiency gains.

This policy recommendation focuses on improving energy efficiency through increased investment in demand-side management programs including energy efficiency, energy conservation and peak demand reduction efforts. Energy efficiency and conservation are the lowest cost resources for reductions in electricity and natural gas use by the residential, commercial and industrial sectors and thus for reduction of greenhouse gasses. There is a long track record of cost effective energy efficiency initiatives, typically called demand side management (DSM), at the local, state and regional levels in areas around the country and in Michigan. There is vast potential for improving the energy efficiency of homes, appliances, businesses and industry in Michigan. A number of DSM efforts are already underway or mandated in Michigan, and legislation recently passed the state House of Representatives (HB5525) and is pending in the state Senate. The goal of this policy is to bring the *total* demand reduction of those existing actions plus new, additional DSM activities in the state to a 1% electric and 0.75% natural gas reduction per year by 2012, and continuing at that rate through the end of the study period. These reductions are cumulative, i.e., demand reductions in the second year are incremental to the reductions in the first year, however they are not absolute in that other factors in the Michigan economy may cause total electric and/or natural gas retail deliveries to increase or decrease.

This policy option considers energy savings goals for electricity and natural gas, and the policy, program, and funding mechanisms that might be used to achieve these goals. These are intended to work in tandem with other strategies under consideration by the RCI and ES TWGs.

### Policy Design

**Goals:** Increase DSM activity in the state beyond recent DSM actions (House Bill 5525, pending in the Senate) to save in each year 1% of the prior year's electricity use and 0.75% of the prior year's natural gas use by the residential, commercial, and industrial sectors, compared to a Business-As-Usual (BAU) forecast that does not incorporate these goals.

**Timing:** Starting in 2009, through 2020 with 3-year ramp-up (full 1% electric and 0.75% natural gas per year by 2012).

**Parties Involved:** Entire state's gas and electric distribution companies and all customers

**Other:** TBD – [as needed and approved by the TWG]

### **Implementation Mechanisms**

TBD – [as approved by the TWG]

### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

### **Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

### **Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

### **Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-2. Existing Building Energy Efficiency Incentives, Assistance, Certification and Financing

### Policy Description

The intent of this policy option is to improve the energy efficiency of existing buildings. Since Michigan has one of the weakest energy codes in the nation, and currently utilizes many of its WW II-era industrial buildings, energy efficiency improvements provide a significant opportunity to reduce Michigan's carbon footprint. This policy sets a goal for reducing energy usage in existing buildings by encouraging energy efficiency upgrades and operating improvements in existing institutional, municipal, commercial, residential and industrial buildings. Incentives, rebates and property tax abatements are imperative to foster state wide participation in implementing energy efficient measures to reduce future energy generation and green house gas emissions. RCI-2 is designed to support development and strategies for Michigan to have a sustainable and cost effective energy efficiency program.

### Policy Design

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* Reduce energy consumption per square foot of floor space at existing buildings by 50% by 2030.]

**Timing:** Program begins in 2010.

**Implementing Parties:** TBD

**Other:** TBD – [as needed and approved by the TWG]

### Implementation Mechanisms

The mechanisms proposed would include:

- Energy survey and audit programs to encompass all facilities including residential: The proposed programs will provide a free or reduced cost residential energy survey or a reduced cost technical energy audit for each commercial, industrial or institutional customer through qualified energy service companies, i.e., Rebuild MI approved providers. Funding will be based on total square footage of building and will require documentation of recommendations, ROI calculations if investment is required and calculated reductions in GHG emissions.
- Incentives and rebates for energy efficiency measures and improvements: This program will provide financial incentives for all state energy consumers to install energy efficient equipment in their homes and businesses. Residential customers will have a separate rebate program to include common and largest energy consuming equipment such as clothes washers/dryers, refrigerators, furnaces and compact

fluorescent lamps. All other customer classes the rebate basis will be for prescriptive technologies such as lighting, HVAC and motors including agricultural technologies. All equipment must be Energy Star rated and rebates only apply to full time Michigan residents and businesses.

- Property Tax Abatement program for achieving LEED for Existing Buildings (LEED EB) Certification by the U.S. Green Building Council. This program will provide property tax abatement by achieving LEED-EB Certification. Abatements will be scaled to the level of certification achieved. Governmental facilities and operations are excluded from these incentives however should be encouraged or required to comply with minimum ranking through existing executive order.
- Short term low or no interest loans: Applies to businesses or energy service companies (ESCO's) that implement energy savings measures with verification & monitoring activities. Loans are secured and bound by purchased equipment and distributed directly to customer or to third party energy service provider. This program will have established ROI terms and is available to all residential and small businesses (SBA members). This program will also complement and promote all other initiatives considered in this policy. Loans will be prioritized and quantified by customer class and applicable to qualified prescriptive technology measures only. Low income class customers may also utilize Michigan's LIEEF for supplemental or full funding of energy improvements.
- Energy efficiency reinvestment funds: Establish a fund which will act as a bank for guaranteed performance based energy improvement projects by issuing internal unsecured loans. Applies to businesses or energy service companies (ESCO's) that implement energy savings measures with verification & monitoring activities. This program will have established ROI terms and is available to all customer classes excluding residential. Projects are approved on short term simple payback basis as long as the debt service from savings does not exceed existing utility costs. Loans will be prioritized and quantified by customer class and applicable to qualified prescriptive technology measures only. Interest on loans to be fixed with portion appropriated for administrative fees and profit (to be used to increase fund size)

#### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

#### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

#### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

### **Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

### **Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

### **Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

### **RCI-3. Regulatory (PSC) Changes to Remove Disincentives and Encourage Energy Efficiency Investments by IOUs**

#### **Policy Description**

Economic regulation of investor-owned utility rates by the MPSC limits the company's earnings potential by determining an authorized level of earnings and by establishing the allowed earnings as a percentage of the utility rate base – meaning the value of assets (e.g. power plants and distribution networks) used in the business. In designing the rates charged to customers to recover the utility's "revenue requirement" (expenses plus return on the rate base), the regulator typically assigns most of the revenue requirement to a predicted level of sales of units of gas or electricity. This method creates financial incentives for the utility to increase, not decrease, its unit sales and make investments in the physical assets of the business.

Successful energy conservation and efficiency programs will reduce unit sales and could cut into the utility's recovery of revenues associated with the costs of doing business, including a reasonable return. If the program costs are expensed, there can be no incremental earnings on the program investment no matter how successful it is. Thus there is limited "upside" potential and a significant risk of harming profitability associated with an energy efficiency program. Cooperative and municipal systems may run the risk of diminished cash flow from reduced sales, even absent the same earnings model as the investor-owned utilities. The financial incentives are to maximize unit sales, consistent with existing production capability, not reduce them.

The natural financial disincentive can be offset by: (1) providing a possible incentive financial benefit for a successful efficiency program; (2) changing the rate method so that expenses and earnings are recovered by a fixed rate charge developed based on the number of customers rather than units sold; (3) allow updating of the sales figure in between rate cases; and (4) utilize a system benefits charge applicable to all distribution service customers for the efficiency program. Items (2) and (3) are alternatives sometimes referred to as "decoupling" of the revenue requirement from a projected sales level determined in the rate case. Item (4) assures that all customers receiving deliveries from the local distribution utility contribute to the program costs, since the benefits are societal.

Decoupling utility unit sales from profits in rate setting while providing the opportunity to earn profits from successful program outcomes can realign incentives to encourage effective utility investment in DSM, energy efficiency and conservation and reduce the incentive to maximize unit sales.

A public benefits charge (sometimes call systems benefits charge) is a fee attributed to utility customers for the purpose of accomplishing a public good, such as reducing emissions. The fee is a non-by passable charge on electric or natural gas utility bills and may be set on a per-meter, per month or volumetric (per kWh) basis. The funds collected

are used to provide energy efficiency, conservation and peak demand reduction programming. This programming can be operated by the distribution utilities or by a commission-supervised third party.

### **Policy Design**

**Goals:** Not quantifiable.

**Timing:** N/A

**Implementing Parties:** TBD

**Other:** TBD – [as needed and approved by the TWG]

### **Implementation Mechanisms**

TBD – [as approved by the TWG]

### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

### **Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-4. Adopt More Stringent Building Codes for Energy Efficiency

### Policy Description

Newly constructed buildings today become the energy-consuming building stock of tomorrow. In an effort to reduce the largest operations and maintenance cost for newly constructed buildings (energy costs), a higher energy standard should be required in Michigan. Stronger building energy codes can be an effective way to eliminate the least efficient energy approaches in new or renovated buildings. The International Energy Conservation Codes (IECC) have become a widely accepted standard. These codes are updated every three years through an exhaustive consensus process involving a large number of code officials and building experts. The 2006 edition to the IECC for residential and commercial buildings would serve as an improved energy building code policy for Michigan.

### Policy Design

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* Reduce energy consumption per square foot of floor space at new construction and renovated buildings by 20% by 2012 and increase incrementally to a 50% reduction by 2030.]

**Timing:** Implementation of the 2006 edition of IECC for commercial and residential buildings should occur in 2008.

**Implementing Parties:** TBD

**Other:** TBD – [as needed and approved by the TWG]

### Implementation Mechanisms

The full implementation of the 2006 Edition of the IECC residential code in Michigan would require legislation that repeals the Stille-Derossette-Hale Single State Construction Act.

In order to support increasing energy efficiency standards for new construction, it would be necessary to implement training for code officials as well as building trade professionals and facility managers to ensure consistent quality control and enforcement measures (see RCI-9).

### Related Policies/Programs in Place

*Background:* Michigan is currently bound by the language of the State Construction Code Act regarding any changes to the Energy Code. Attempts to update the Residential Energy Code within the confines of the State Construction Code Act were met by litigation from the Michigan Association of Home Builders (MAHB) in February, 2005.

*This litigation is still unresolved as the Michigan Supreme Court considers an appeal from the MAHB.*

*Concurrently, the Bureau of Construction Codes is conducting ad hoc committee meetings through June of 2008 to discuss possible commercial and residential energy code updates. The ad hoc committee consists of representatives from the building, manufacturing, building code, government and public sectors. The ad hoc committee's suggestions for commercial and residential energy code updates will be guided by the State Construction Code Act. The suggestions generated from the ad hoc committee will be presented to the Department of Labor and Economic Growth for consideration to update the current energy code. Any changes to the code will consequently follow the rule promulgation process.*

*Current ad hoc committee discussions include suggestions for the commercial code to reflect the 2006 edition to the International Energy Conservation Code (IECC), and the residential code to reflect portions of the IECC as well as the International Residential Code (IRC).*

There is a 2007 proposed House Bill 4812 that recommends the Michigan Uniform Energy Code be replaced by the 2004 supplement version of IECC. There is a 2007 Senate Bill 597 that recommends the Michigan Uniform Energy Code be replaced by the 2006 edition of the IECC.

There is a voluntary Michigan Greenbuilt program sponsored by the Michigan Association of Homebuilders that includes an energy performance standard for residential homes that exceeds the minimal Michigan Uniform Energy Code standard.

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

**Feasibility Issues**

TBD – [as needed and approved by the TWG]

**Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-5. Michigan Climate Challenge and Related Consumer Education Programs

### Policy Description

Each and every local government official, small business owner and citizen plays an integral part in recognizing climate change risks and committing to specific actions to reverse those changes. Together these individual actions will reduce the risks to the environment now and in the future. The Michigan Climate Challenge Program provides the opportunity and resources for communities, organizations, businesses, and individuals to make those commitments allowing Michigan to move forward in addressing climate change.

### Policy Design

Through a web-based “Online Pledge”, the Michigan Climate Challenge Program will encourage voluntary public commitments for actions to reduce greenhouse gas emissions in communities throughout Michigan. The Department of Environmental Quality, working in conjunction and consultation with other state agencies, will develop and launch the MCCP. Web-based resources and information in the form of a “Climate Action Toolkit” will provide individuals and organizations recommendations for reducing greenhouse gas emissions. The “Climate Action Toolkit” 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.

**Goals:** Not Quantifiable.

**Timing:** TBD

**Implementing Parties:** TBD - [as approved by the TWG]

**Other:** TBD – [as needed and approved by the TWG]

### Implementation Mechanisms

TBD – [as approved by the TWG]

### Related Policies/Programs in Place

TBD - [as approved by the TWG]

### Type(s) of GHG Reductions

TBD – [as approved by the TWG]

### Estimated GHG Reductions and Costs or Cost Savings

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

### **Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

### **Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

### **Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-6. Renewable Energy Systems Integration

### Policy Description

Distributed generation sited at residences and commercial and industrial facilities, and powered by renewable energy sources, provides electricity system benefits and displaces fossil-fueled generation, thus reducing greenhouse gas emissions. Increasing the use of renewable distributed generation in Michigan can be achieved through a combination of regulatory changes and incentives.

- Through an educational campaign individuals and businesses will gain a better understanding of the renewable energy options and requirements of the program. In addition, short-term, low interest loans from the state and/or tax credits will be available to businesses, and tax credits will be available to homeowners and residential rental property owners, for energy-efficiency upgrades
- Potential elements of this option include:
  - Solar roofs (roofing materials with built-in solar photovoltaic cells, or solar PV panels erected on roofs).
  - Solar water heating and solar space heating systems.
  - Wind powered systems, particularly for rural areas.
  - Biomass-fired generation, space, or water heating systems.
  - Programs targeted at specific customer sectors (residential, commercial, industrial), or specific markets within sectors.
  - Tax credits, and/or utility or other incentives to lower the first cost of distributed energy systems to users.
  - Potential supporting measures for this option include training/certification of installers/contractors, net metering and other pricing arrangements, interconnection standards, and creation/support of markets for biomass fuels.

### Policy Design

Customer-sited distributed generation powered by renewable energy sources provides electricity system benefits such as avoided capital investment and avoided transmission and distribution losses, while also displacing fossil-fueled generation and thus reducing greenhouse gas emissions. Customer-sited renewable distributed generation can include solar photovoltaic systems, wind power systems, biogas and landfill gas-fired systems, geothermal generation systems, and systems fueled with biomass wastes or biomass collected or grown as fuel. Policies to encourage and accelerate the implementation of customer-sited renewable distributed generation include direct incentives for system purchase, market incentives—including “net metering and feed-in-tariff”--related to the pricing of electricity output by renewable distributed generation, state goals or directives, and favorable rules for interconnecting renewable generation systems with the electricity grid. Non-electric renewable energy applications also covered by this policy include solar

water heat and solar space heat and cooling. It is suggested that Michigan should, at a minimum, set as its target the addition of customer-sited distributed renewable generation consistent with the overall generation capacity by year goals for renewable distributed generation.

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* x MWhrs per year of new distributed renewable generation.]

**Timing:** New distributed generation beginning in 2010 and continuing each year thereafter.

**Implementing Parties:** TBD

**Other:** TBD – [as needed and approved by the TWG]

### **Implementation Mechanisms**

TBD – [as approved by the TWG]

### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

### **Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-7. Promotion and Incentives for Improved Design and Construction in the Private Sector

### Policy Description

Revolving loan funds are proven and effective tools for promoting energy efficiency in state and local government facilities. This tool should be utilized in the private sector. This policy would facilitate investment in energy efficiency improvements by providing zero interest loans to local governments that provide the program to private entities. Utility cost savings for the private sector would provide cash flow for repaying principle, with the cost of program for the local government limited to interest payments and loan administration.

### Policy Design

Incentives, such as permitting and fee advantages, tax credits, financing incentives (such as “green mortgages”), or other inducements to encourage retrofit of existing residential and commercial buildings or for the development of non-traditional off-grid low and carbon neutral energy sources. The state can work with financial institutions to develop loan tools for these programs. Eligibility for the loans would be factored upon the selection of standards.

### Policy Design Goals

Michigan jurisdictions that have adopted enforceable standard will be eligible for managing the loans. The IECC, or alternative standard, must be enforced.

This policy assumes a gradually increasing energy efficiency code for new construction, backed up by strong, consistent enforcement measures.

- Providing incentives, such as permitting and fee advantages, tax credits, financing incentives (such as “green mortgages”), or other inducements to encourage retrofit of existing residential and commercial buildings or for the development of non-traditional off-grid low and carbon neutral energy sources. The state can work with financial institutions to develop loan tools for these programs.
- Targeting existing buildings for efficiency improvements during both major and minor renovation, through application and enforcement of building codes and/or with tax rebates or other incentives.
- Providing incentives, such as permitting and fee advantages, tax credits, financing incentives (such as “green mortgages”), or other inducements to encourage retrofit of existing residential and commercial buildings or for the development of non-traditional off-grid low and carbon neutral energy sources. The state can work with financial institutions to develop loan tools for these programs.

- Energy-reduction targets should be periodically reassessed. Potential measures supporting this policy can include outreach and public education, public recognition programs, improved enforcement of building codes, encouraging or providing incentives for energy tracking and benchmarking, performance contracting/shared savings arrangements, technical support resources for implementation, development of a clearinghouse for information on and access to software tools to calculate the impact of energy efficiency and solar technologies on building energy performance.

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* Induce 5% of new residential buildings and 2% of new commercial buildings annually to go to “beyond code” energy use levels that improve energy performance over the average new building (that meets the upgraded building code) by 30%. These numbers will, on average, decrease energy use by 30% across the board above the existing building code requirements and encourage significant examples throughout the state of various building types that use 50% or less energy than is supported by the existing building code.]

**Timing:** Begins in 2010, continues indefinitely

**Implementing Parties:** TBD - [as approved by the TWG]

**Other:** TBD – [as needed and approved by the TWG]

### **Implementation Mechanisms**

TBD – [as approved by the TWG]

### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

**Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

**Feasibility Issues**

TBD – [as needed and approved by the TWG]

**Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-8. Net Metering For Distributed Generation

### Policy Description

Net metering in a broad sense refers to policies that provide the opportunity for individuals or businesses to obtain financial benefits from small electricity generators installed at their home or business location. A basic form of net metering allows the consumer to deliver any excess generation from its small generator to the utility through the standard energy meter, which runs both forward and backward during the billing period. The customer is charged by the utility only for the net amount of energy taken from the utility during the period, which provides a financial benefit at the utility's retail charge for all electricity produced by the customer generator (the displaced utility kWh's plus credit on future bills for power beyond the customer's usage delivered to the grid). Variations on the basic form of net metering include: (i) limiting the benefit to the value of grid power offset by customer generation during the billing period (no carryover); (ii) a net purchase and sale method that measures flow separately in each direction, with customers paying the utility retail rate and receiving a wholesale rate for the excess generation; and (iii) one or more methods combined with a separate charge to maintain the customer's contribution for distribution and any transmission related costs.

Whatever form it takes, the purpose of a net metering arrangement is to provide financial benefits to the customer which can offset part of the cost of the small generator.

Distributed generation (DG) refers to small electric energy sources dispersed throughout the grid on the premises of utility customers. It is sometimes referred to as on-site, dispersed or decentralized generation. Benefits of DG can include reduced transmission losses because the power is generated near the point of use, a reduction in the size of distribution power lines and environmental benefits where renewable or cleaner fuel sources are used for DG. Examples include rooftop solar panels, small wind turbines, natural gas fueled micro-turbines or micro-hydroelectric generators.

### Policy Design

A voluntary, statewide net metering program was adopted by the MPSC in March, 2005 (Case No. U-14346) limited to renewable energy facilities with capacity under 30 kW and capped at the greater of 100 kW or 0.1% of a utility's peak load. Qualifying facilities must be sized no larger than necessary to meet the customer's needs. Several billing configurations are permitted at the option of the utility starting with the basic net metering form, with credits for excess generation being for allowed up to 1 year. Any excess credits after one year go to the utility to offset program costs. All regulated investor-owned and cooperative electric utilities are participating.

The Federal Energy Policy Act of 2005 requires the state to consider adopting a new standard whereby all public utilities would have to offer net metering service to their

customers. The MPSC is considering whether to adopt this standard and is also considering possible changes to the voluntary program described above.

The Michigan Legislature is considering measures that would establish a statewide program requirement with larger size limits on the facilities and total program, a mandate to use the basic net metering format, and related measures on interconnection of facilities.

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* access to x MWhrs per year of new distributed renewable generation.]

**Timing:** Implementation begins in 2010 and continues thereafter.

**Implementing Parties:** TBD - [as approved by the TWG]

**Other:** TBD – [as needed and approved by the TWG]

### **Implementation Mechanisms**

TBD – [as approved by the TWG]

### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

### **Feasibility Issues**

TBD – [as needed and approved by the TWG]

**Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-9. Training and Education for Building Design, Operation and Construction

### Policy Description

RCI-4 addresses the establishment of more stringent energy codes for energy efficiency. Pro-active education programs for building trade professionals are a necessary component to achieving successful energy efficient construction practices. Improved construction standards resulting in energy efficient buildings can only be accomplished if the building code officials and building trade contractors, sub-contractors and facility operators are properly educated in building envelope and mechanical performance building and maintenance techniques. Properly trained building code, building trade professionals and facility operators with help assure consistent quality control and enforcement measures for Michigan's enhanced building codes and market based building performance practices.

Also, adhere to the periodic upgrades of the national standards, and review and upgrade existing state and local building codes. The policy should cover new residential and commercial buildings plus retrofits that are subject to building energy codes.

### Policy Design

**Goals:** (Not Quantifiable) Provide up to date building performance, code compliance, and mechanical equipment training to building code officials, homebuilders, commercial construction contractors, heating/ventilation & air conditioning contractors, electricians, plumbers, carpenters, remodelers, other construction trade professionals, and facility operators.

Training programs should focus on: 1) Proper construction and maintenance practices with building envelope and mechanical performance standards as established in revised Michigan building energy codes (see RCI-4). 2) Proper construction and maintenance practices with building envelope and mechanical performance standards as identified in "beyond code" building programs.

Develop a certification program for code officials, builders, and contractors and facility operators who successfully complete energy efficiency and related Green building training programs

Provide adequate funding to establish training at all levels: code officials, building construction professionals, and facility operators.

**Timing:** Begin funding in 2009. Initial training to begin in 2009.

**Implementing Parties:** TBD - [as approved by the TWG]

**Other:** TBD – [as needed and approved by the TWG]

**Implementation Mechanisms**

TBD – [as approved by the TWG]

**Related Policies/Programs in Place**

TBD - [as approved by the TWG]

**Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

**Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

**Key Uncertainties**

TBD – [as needed and approved by the TWG]

**Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

**Feasibility Issues**

TBD – [as needed and approved by the TWG]

**Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]

## RCI-10. Water Use and Management

### Policy Description

A considerable amount of energy is used to pump, treat, and deliver water across the state. This policy options aims to reduce energy consumption by reducing overall water use and improving the efficiency and management of the State water supply and water management facilities.

### Policy Design

The State's current uses of water are to agricultural consumers, to municipal consumers, and to industrial users. A significant amount of energy is used to pump this water from underground aquifers and open water sources, and to treat it in wastewater facilities after it is used.

Five specific recommendations are provided below:

1. Accelerate investment in water use efficiency: Implement best management practices and efficient water management practices, and provide incentives for implementation of water management improvement measures. Coordinate with the investments in energy efficiency methods of water handling. Start in the areas of the state with most energy-intensive water use cycles. Consider developing a statewide water and wastewater savings plan, based on a thorough assessment of water and wastewater options in all water using sectors.

2. Increase the energy efficiency of all water and wastewater treatment operations. Develop long-term programs to better mesh with the long-term investments in water and wastewater infrastructure. For example, for water pumping, in particular, two specific options are worth considering:<sup>44</sup>

- Pump Testing Program. A large amount of energy is likely expended by a small number of older well pumps that are often run until they failure, many years after it would be economic to replace them. Incentives combined with the provision of energy efficiency information through the existing pump testing program could lead to significant energy savings.
- Encouraging Pump Design/Planning/Maintenance Best Practices Study in Rapidly Growing Areas. Many municipalities, especially small but rapidly growing cities, lack the experience or resources to optimize the specifications of new pumps to reduce energy consumption. An effort to benchmark effective pump specification, management, and maintenance procedures across municipalities and to share best practices with emerging cities could yield large savings.

3. Increase energy production by water and wastewater agencies from renewable sources such as in-conduit hydropower and biogas. Add generation from solar and wind resources to water and wastewater projects where applicable.

4. Encourage and create incentives for technologies with the capability to reduce water use associated with power generation. Included would be zero or low-water-use technologies and renewable energy technologies, as well as energy efficiency technologies that reduce electricity consumption.

5. Ensure that power plants use the best management practices and economically feasible technology available to conserve water (via siting, evaluation, permitting or other processes).

**Goals:** TBD - [as approved by the TWG]

[*CCS draft language:* Improve the average energy efficiency of water utilities in the state (in terms of kWh used per gallon pumped) by 20% over the course of three years.]

**Timing:** Implement program in 2010, complete in 2013.

**Implementing Parties:** TBD

**Other:** TBD – [as needed and approved by the TWG]

#### **Implementation Mechanisms**

TBD – [as approved by the TWG]

#### **Related Policies/Programs in Place**

TBD - [as approved by the TWG]

#### **Type(s) of GHG Reductions**

TBD – [as approved by the TWG]

#### **Estimated GHG Reductions and Costs or Cost Savings**

TBD – [as approved by the TWG]

**Data Sources:** [TBD, as approved by the TWG]

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

**Key Assumptions:** [TBD, as approved by the TWG]

#### **Key Uncertainties**

TBD – [as needed and approved by the TWG]

**Additional Benefits and Costs**

TBD – [as needed and approved by the TWG]

**Feasibility Issues**

TBD – [as needed and approved by the TWG]

**Status of Group Approval**

Pending – [until GCGW moves to final agreement at meeting #7 or #8]

**Level of Group Support**

TBD – [blank until GCGW meeting #7 or #8]

**Barriers to Consensus**

TBD – [blank until final vote by the GCGW]