



## Transportation and Land Use Technical Work Group

### Summary List of Pending Policy Options-Draft

Policy Option	Policy Description	GHG Reductions (MMtCO <sub>2</sub> e)			Net Present Value 2008–2025 (Million \$)	Cost-Effectiveness (\$/tCO <sub>2</sub> e)	Level of Support
		2015	2025	Total 2008–2025			
TLU-1	Promote Low-Carbon Fuel Use in Transportation	TBD	TBD	TBD	TBD	TBD	Pending
TLU-2	Eco Driver Program	TBD	TBD	TBD	TBD	TBD	Pending
TLU-3	Truck Idling Policies	TBD	TBD	TBD	TBD	TBD	Pending
TLU-4	Advanced Vehicle Technology	TBD	TBD	TBD	TBD	TBD	Pending
TLU-5	Congestion Mitigation	TBD	TBD	TBD	TBD	TBD	Pending
TLU-6	Land Use Planning and Incentives	TBD	TBD	TBD	TBD	TBD	Pending
TLU-7	Transit and Travel Options	TBD	TBD	TBD	TBD	TBD	Pending
TLU-8	Increase Rail Capacity, and Address Rail Freight System Bottlenecks	TBD	TBD	TBD	TBD	TBD	Pending
TLU-9	Great Lakes Shipping	TBD	TBD	TBD	TBD	TBD	Pending
	<b>Sector Total After Adjusting for Overlaps</b>	TBD	TBD	TBD	TBD	TBD	NA
	<b>Reductions From Recent Actions</b>	TBD	TBD	TBD	TBD	TBD	NA
	<b>Sector Total Plus Recent Actions</b>	TBD	TBD	TBD	TBD	TBD	NA

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.

## TLU-1. Promote Low-Carbon Fuel Use in Transportation

### Policy Description

Reduce the GHG emissions from the use of transportation fuels through a package of incentives, education and standards, including recommendations by the Michigan Renewable Fuels Commission (RFC). Renewable fuels and electric propulsion provide significant opportunities to reduce GHG emissions from the transportation sector if promoted in a way that emphasizes the reduction of GHG emissions on a lifecycle basis.

### Policy Design

**Goals:** Reduce GHG emissions from the transportation sector by reducing the average carbon “intensity” of on-road transportation fuels sold within the state, measured on a life-cycle basis. Achieve (XX%) reduction of GHG emissions on a lifecycle CO<sub>2</sub> basis by 2015 and (XX%) reduction by 2025 compared with BAU forecasts.

In its June 2007 report, the Michigan RFC recommended a variety of actions to stimulate the production and use of renewable, low-carbon fuels within the state. Current priorities for the Commission include further work on these three recommendations:

**Establish a Next-Generation Renewable Fuels Feedstock Program:** To encourage the sustainable production of next-generation bioenergy and biomass materials while reducing risk to landowners. The program should be linked to the development of prospective biomass customers, and shall include the following:

- Payments to landowners/operators that produce dedicated energy crops (payments awarded to projects that show the greatest promise in terms of sustainability)
- Tax incentives or loan guarantees for the purchase of new equipment required for energy crop establishment, harvest, transport, or storage
- Research on agronomic production systems for energy crops in Michigan and provision of educational materials and technical assistance for sustainable energy crop production
- Creation of a “nursery” of energy crops as a basis for a biotechnology- driven plant breeding program to enhance and improve energy crops and other biomass plants, as we know them today

**Create a Green Retailers program (tax incentives for E85 and biodiesel sales):** The state should establish a “Green Retailers” program that rewards retail and wholesale outlets that attain benchmarks in the sale of biofuels. Such a step would provide state recognition for achievement and provide important cost-savings to both the seller and the consumer of biofuels. To provide alternative fuel choice to consumers, promote state energy security needs and reduce greenhouse gas emissions, a goal of achieving a minimum of 10 percent alternative fuel use in the transportation sector by 2012 is a critical first step. Access to alternative fuels should address both gasoline and diesel fuels. To achieve the goal of 10 percent alternative fuel use in gasoline

transportation fuels, a Green Retailer designation would be provided by the state to any retail outlet that sells a minimum level of gasoline biofuel (E85).

A Green Retailer will receive incentives to support the infrastructure development needs for E85 and to help ensure that the retailer is able to provide value-based pricing (ethanol's lower energy content requires a lower price per gallon to offset the fuel economy reduction) for sustainable consumer use. The applicable incentive will be a reduction in the payment of motor fuel tax on all gasoline sold at the facility. These incentives are needed in the early stages of E85 growth to accelerate the development of new production, distribution, and retail channels.

The same incentives should apply to diesel transportation fuels, as long as a retailer meets the requirements of a Green Retailer for E85. A Green Retailer designation would apply for similar minimum levels of B20 biofuel sales. The reduction in motor fuel tax would apply to the amount of diesel fuel sales at the facility.

As an alternative to the application of incentives to the Green Retailer described above, a feebate approach could be considered where increases to the motor fuel tax (fee) are used to create a fund that would provide Green Retailers with an incentive (rebate) amount for each gallon of E85 or B20 sold. Such a public/private partnership is critically needed to accelerate consumer access to alternative fuels and support consumer value, setting the stage for increased use of renewable fuels in the transportation sector beyond low-level blends. The amount of the fee (per gallon of gas sold) could initially start at 0.01/gallon and should be increased as needed to achieve a goal of 10 percent alternative fuel sales by 2012. The amount of the fee and the amount of the rebate should be reviewed on an annual basis by the RFC.

The governor should initiate the development of a strategy to enact a low-carbon emission transportation fuels program in Michigan: Such a program should review the regulatory and legal mechanisms needed to enact a low-carbon fuels approach in Michigan. The strategy should identify mechanisms that will result in Michigan achieving 25 percent use of renewable fuels by 2025. This strategy should be integrated into and be consistent with an overall carbon reduction strategy for the state.

The above combination of incentives and requirements would work together help the state achieve a goal of reduced GHG emissions from the use of transportation fuels. A renewable fuel feedstock program would help to encourage local production of next generation feedstocks--such as perennial grasses and woody biomass--attracting new fuel producers and capturing the economic value of renewable fuel production within the state. A Green Retailers program would encourage the development of needed infrastructure for renewable fuels (such as E85 and B20), while also creating incentives for the sale and consumer purchase of those fuels. Currently available funding assistance for alternative fuel pumps and tanks is not considered to be sufficient incentive. Finally, a low-carbon fuels policy would create an overall requirement that the CO2 content, or "intensity," of transportation fuels sold in the state decline over time. This would help to ensure that the above renewable fuel incentives achieve desired GHG reduction goals, while also encouraging other potential low-carbon transportation fuels (e.g., electricity for plug-in hybrids) to play a role.

The State of California is currently developing a Low-Carbon Fuel Standard that would require a 10% reduction in the carbon intensity of transportation fuels by 2020, and other states are now considering similar policies. A recent federal proposal, not yet acted on, would require a 5% reduction in transportation fuel carbon intensity by 2022, and 10% by 2028. The federal Renewable Fuel Standard (RFS), recently passed as part of EISA, requires that new renewable fuels meet minimum GHG reduction targets but does not set an overall target for all transportation fuels, including renewable fuels currently under production.

While a federal low-carbon fuel policy would potentially make further action in Michigan unnecessary, there is no clear timeframe for such action or guarantee that Congress will act. Michigan could try to encourage federal policy in this area, but would play a stronger role by taking the lead and establishing its own state policy. By taking a leadership position, Michigan would also position itself for a competitive advantage in the development of a low-carbon fuel industry within the state.

**Timing:**

**Parties Involved:** Michigan legislature, MDEQ, MDA, MDNR, fuel providers, agricultural producers, utilities, auto companies.

**Other:**

### Implementation Mechanisms

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

### Related Policies/Programs in Place

TBD

### Type(s) of GHG Reductions

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-2. Eco Driver Program

### Policy Description

Driving behavior can significantly influence a vehicle's fuel economy performance. Eco-driving principles incorporate a wide range of initiatives that can help drivers maximize the fuel efficiency from their existing vehicles by better understanding the direct impact that driving style, driving patterns, vehicle technologies, and vehicle maintenance have on a vehicle's fuel economy. A properly designed eco-driving program not only enhances driver awareness and understanding in the short term but also provides a systematic program framework that can alter driver behavior and yield tangible environmental and consumer cost benefits.

Eco-driving programs leverage driver behavior across the entire fleet of existing vehicles in use. The primary focus of an eco-driving campaign would target light duty vehicles where driver education on eco-driving principles would have the greatest benefit. Michigan drivers consume over 5 billion gallons of gasoline per year which generate over 44 million metric tons of CO<sub>2</sub> emissions. Eco-driving training programs in Europe and Canada have documented reductions in fuel consumption ranging from 16% to 25% for individual drivers. An integrated eco-driving program in Michigan can be designed to achieve a fuel-economy increase (and corresponding GHG reduction) of at least 10% in the mid-term with long term benefit potential of up to 20%.

### Policy Design

A properly designed eco-driving program must move beyond a list of driver "tips" and focus on providing the appropriate tools and programs to systematically change driver behavior.

#### Key eco-driving principles must cover:

- Driving style
  - Acceleration: accounts for 50% of a vehicle's fuel consumption in city driving
  - Speed limits: driving at 65mph requires 15% more fuel than 55mph
  - Safe driving distances: 20% less fuel to accelerate from 5mph than from a full stop
- Starting and idling
- Trip planning
- Vehicle drag/weight
  - Excess cargo: fuel economy drops 1% for every 25-50 lbs of additional weight
  - Open windows/truck bed covers/vehicle add-ons
- Proper maintenance
  - Engine tuning
  - Correctly inflated tires
- Vehicle technology applications

- Use of instantaneous fuel economy readouts
- Use of navigation/direction systems

**A Michigan eco-driving program must consider the following program initiatives:**

*Direct Driver Training Initiatives*

- **Scope:** Provide direct, hands-on training from professional eco-driving instructors to provide a credible “real-world” basis for individual drivers to understand the direct impact that their driving “decisions” have on fuel consumption and costs. This direct interaction can start with new drivers who must currently pass a “driver education” course. In addition, eco-driving seminars and training can be linked with corporate/coalition initiatives to highlight specific eco-driving benefits.
- **Key Enablers:**
  - Development of an eco-driving module to be incorporated into all “new driver” course instruction. Module must include both written (online materials) as well as hands-on driving practice with the driving instructor.
  - Eco-driving course instruction and hands on training for all “new driver” licensed instructors. Training to be provided by professional eco-drivers in a series of state-sponsored training courses.
  - State support for eco-driving training seminars in partnership with key auto coalition sponsors (AAA, Automakers etc.). Goal is to document average savings for typical drivers to use as a media event to highlight eco-driving impact. Typical training package used in Europe and Canada targets 50+ drivers and includes 1) fuel economy monitoring during 20+ mile course (city/highway) 2) eco-driving instruction and discussion and 3) repeat of 20+ mile course with eco-driving instructor to define improvement.
- **Goal:** Newly trained drivers will gradually spread what they learn to friends and neighbors, extending the impact of the program beyond the formal participants. Full implementation for new drivers programs by 2010. State supported training in partnership with corporate/coalition members should target 5-10 regional events per year to leverage media focus.

*General Eco-Driving Education*

- **Scope:** Highlight importance of ongoing eco-driving education by incorporating the review of an eco-driving training module as part of the state’s driver license renewal requirement.
- **Key Enablers:** Development of an interactive, on-line eco-driving module. (Development of this module can leverage existing resources provided by automakers and other auto related groups)
- **Goal:** State-wide implementation by 2010.

*Vehicle Maintenance*

- **Scope:** Proper inflation of tires is one of the most direct eco-driving actions that can be taken and can increase fuel economy by 2-5%.
- **Key Enablers:**

- Encourage all fueling stations to provide free tire air and accurate pressure gauging by providing a tax credit for up to 50% of the equipment cost. By 2010, require that all fuel stations (exempting low volume operators) have a tire pressure pump/guage in place.
- Encourage all repair/oil-change facilities to adjust tire pressure as part of their service – along with an eco-driving checklist – and create a state sponsored “eco-star” program that highlights repair/oil change facilities that incorporate eco-driving initiatives.
- Require aftermarket tire manufacturers to display fuel economy ratings (rolling resistance standards) from tire manufacturers.
- **Goal:** Full customer access to tire pumps by 2010. Repair/oil change checklist with air pressure - 90 percent participation by 2012.

#### *Vehicle Applications*

- **Scope:** Real-time fuel economy indicators on vehicle instrument panels are one of the best means for encouraging eco-friendly driving because they provide prompt, quantitative feedback to drivers. Unfortunately the State of Michigan acting alone cannot require manufacturers to offer such indicators on all vehicles, and it does not seem to be practical at present to install such indicators as after-market devices. Therefore we have not included a goal relating to fuel-economy indicators. Key Enablers:
- **Key Enablers:** Pursue a resolution with the governor and state officials to encourage manufacturers to offer real-time fuel economy indicators more widely.”
- **Goal:** 90% of new vehicles with real-time fuel economy indicators by 2015.

#### **Implementation Mechanisms**

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

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

TBD

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

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

**Key Uncertainties**

TBD – [as needed and approved by the TWGs]

**Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

**Feasibility Issues**

TBD – [as needed and approved by the TWGs]

**Status of Group Approval**

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

**Level of Group Support**

TBD – [blank until MCAC meeting #5]

**Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-3. Truck Idling Policies

### Policy Description

This policy option aims to reduce greenhouse-gas and other emissions from unnecessary idling of heavy-duty vehicles, including trucks, train engines and buses. The EPA estimates that truck idling consumes 1 billion gallons of fuel annually, emitting 11 billion tons of carbon dioxide [*substitute Michigan-specific numbers when available*]. Much of this idling takes place during mandatory rest periods to provide heating or cooling of cabin air. Substantial reductions in fuel consumption and GHG emissions could be realized by providing alternate means for cabin conditioning.

Additional idling occurs during vehicle operation, for example loading and unloading of buses and trucks. The implementation of public and private fleet anti-idling policies and ordinances, targeted education of bus and truck operators, and creation of low-cost means to access available EPA-verified technologies, could help encourage emissions reductions from heavy-duty diesel engines.

### Policy Design

#### Goals:

Reduce heavy-duty engine idling by providing increased availability of electrification at privately owned truck stops, making electrification available at publicly owned rest areas, or encouraging greater use of Auxiliary Power Units (on-board generators) for heating, cooling, and other creature comforts on heavy-duty vehicles. Provide financial assistance (e.g. low-interest revolving loans) to truck-stop operators and truck owners/operators for infrastructure development or equipment purchase. Undertake targeted educational activities as appropriate with truck, bus, and truck-stop owners and operators. Achieve diesel idling reductions from heavy-duty diesel engines of 40 percent by 2015 and 80 percent by 2025, relative to baseline.

Adopt a Michigan anti-idling law based on the EPA Model State Idling Law (<http://www.epa.gov/SmartwayLogistics/documents/420s06001.pdf>) and/or encourage adoption of local ordinances to address idling during operation of buses and heavy trucks.

#### Timing:

**Parties Involved:** truck and bus fleet owners and operators, MDOT, truck-stop owners and operators

**Other:** Issues to be resolved include, among others, the choice of implementing one EPA verified technology over another (e.g. electrification vs. Auxiliary Power Units); costs and benefits associated with providing anti-idling infrastructure/facilities at public rest areas vs. private truck stops; costs and benefits to fleet operators and to the state; and enforcement mechanisms that would be required. Potential funding sources include funding from the gas tax and from CMAQ and other federal agency grants.

### **Implementation Mechanisms**

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

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

TBD

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

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-4. Advanced Vehicle Technology

### Policy Description

Create policy that will expand the development and use of more efficient vehicle design and/or hybrid propulsion systems.

### Policy Design

#### Goals:

- Create and expand a market for series Plug-in Hybrid Vehicles with modern high energy density battery technology, as set to penetrate the market in 2010 and encourage similar applications to other transportation sectors, such as public transportation, delivery, public services, etc. to obtain 5% total market penetration of new vehicle sales by 2025. Use this market to encourage Michigan-based battery research and development. Consider inclusion of other advanced vehicle technologies.
- Make available loans and subsidies to municipalities, local governments, waste management organizations, etc. to encourage more rapid adoption of hybrid vehicles by fleets offering public services (transit agencies, schools, and refuse companies) with a goal of achieving a 15% increase in hybrid use by 2020 in this sector.
- Provide funding through tax incentives for the research and development of freight vehicle efficiency improvements to realize a 20% reduction in green house gas emissions by 2025 from this industry.

**Timing:** The timing for advanced vehicle technology improvements will have a direct correlation with the consumer market based on fuel prices and a desire for Michigan and the United States to become more energy independent.

**Parties Involved:** Public Utilities, Consumers, Original Equipment Manufacturers (Battery Manufacturers, Automobile Manufacturers) Municipalities, Local Governments, Waste Management, Freight Industry

**Other:** Incentives directed toward the consumer will build a market that encourages original equipment manufacturers to produce more efficient vehicle and propulsion design. This will stimulate the ancillary manufactures to further improve the efficiency of products to support the OEMs. The majority of the subsidies and incentives will come at the inception of approval of these policies to encourage the market. Subsidies and incentives will slowly taper off until the full potential of market penetration has been realized and the technologies have become economically competitive.

### Implementation Mechanisms

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

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

TBD

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

CO<sub>2</sub>:

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

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**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-5. Congestion Mitigation

### Policy Description

To incorporate the following policy actions:

Improve traffic flow and travel time through expanding the use of intelligent transportation systems (ITS). In conjunction with expanding ITS, the following actions should also be considered; identifying and improving key bottlenecks, construct modern roundabouts at appropriate intersections, and continue the use of the MDOT courtesy patrol on congested roadways. All of these elements contribute to reducing travel delay for both recurring and non-recurring congestion.

Promoting the development of intermodal freight terminals will facilitate freight shipment on rail and air thus reducing the volume of freight on Michigan roadways. By supporting these efforts the congestion mitigation policy option will allow for more efficient travel and increased economic output.

### Policy Design

**Goals:** Below are initial goals for this policy. The final goals will be determined once GHG reductions and associated costs have been analyzed.

- Reduce travel time delay from recurring and non-recurring congestion in Michigan's major urban areas (metro Detroit and Grand Rapids) by 10% by 2025. This can be achieved through implementing an appropriate combination of the methods described in the policy description. In 2005 metro Detroit drivers had 54 hours of delay annually and Grand Rapids drivers had 24 hours of delay annually. (Delay estimates are for one driver versus free-flow conditions for a single year.)
- Reduce travel time related to non-recurring congestion (i.e. road construction) by continuing to implement and refine the Michigan Work Zone Mobility Policy. This policy sets a 10 minute threshold for congestion related to road work. If a vehicle is delayed more than ten minutes this flags the department to review and modify its standards.
- Funding intermodal freight initiatives such as the Detroit Intermodal Freight Terminal (DIFT) and the West Detroit Rail Junction will increase rail efficiency and reduce the number of long haul shipments on Michigan roadways.

#### Timing:

**Parties Involved:** Michigan Department of Transportation and USDOT Federal Highway Administration, MPOs

#### Other:

### **Implementation Mechanisms**

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

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

TBD

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

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-6. Land Use Planning and Incentives

### Policy Description

Implement state policies and programs that encourage local and regional planning and development strategies in order to reduce the projected growth of vehicle miles traveled (VMT) and corresponding greenhouse gas (GHG) emissions. The State will enable each region to adopt a unique mixture of policies to reach reduction goals in its own manner. Strategies include:

- Promoting and expanding regional growth management options that result in more compact mixed-use, transit-oriented, walkable development
- Transportation system management and pricing that allows for greater investment in alternatives to the single-occupancy vehicle, such as public transit
- Use of other land use related economic development tools as recommended in the Michigan Land Use Leadership Council's Report (2003).

### Policy Design

#### Goals:

- To reduce the conversion of greenfield open land to development 25% by 2015, 50% by 2025, and 80% by 2050 compared to Michigan's land use growth pattern of 2000-2005.
- To encourage communities to utilize an "infill" approach for both new and redevelopment projects by focusing on areas where infrastructure already exists. On a local and regional basis, track and compare private and public percentage of investments of infill development/redevelopment vs. greenfield development.
- Beginning in 2009, work to ensure that at least 60% of new/future statewide growth utilizes more compact development or transit-oriented development design.

These goals can be accomplished through

- Multi-jurisdictional land use planning and zoning policies, tax base sharing, and providing state and local incentives.
- Market-based approaches in future land development and housing policies that focus public and private investments toward achieving higher density, transit-oriented, compact or mixed-use development (where appropriate), while conserving natural resources and protecting our land-resource based industries.
- Integrated transportation policies, investments, system management, and pricing to offer Michigan residents and visitors access to an energy-efficient and cost-effective variety of travel options.
- A new Statewide Comprehensive Planning Law enacted. This could be focused on public participation in creating a locally driven comprehensive planning process for local units of government to follow in meeting key statewide goals for economic, social and environmental

priorities. If plans are enacted by a certain date established, those communities would qualify for priority funding from state government programs.

Changes in land use, combined with transportation alternatives, can be expected to accomplish corresponding reductions in the projected overall growth of VMT. By 2050, overall, annual statewide VMT is projected to grow 82% from a 2002 baseline of 98 billion vehicle miles traveled per year to 179 billion vehicle miles traveled per year in 2050. Subject to analysis for cost-effectiveness and potential climate change impact, corresponding goals for VMT reduction should be

- To reduce the growth of VMT to 10% by 2015, to 15% by 2025, and to 25% by 2050.

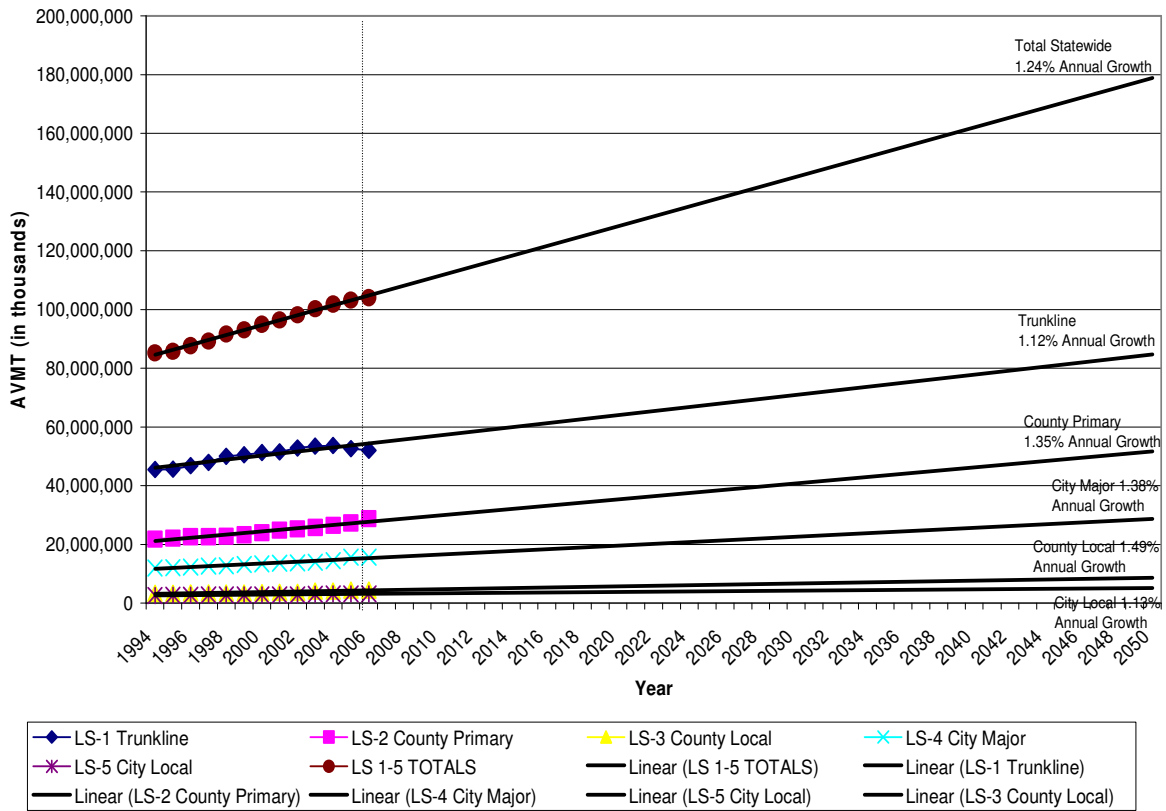
**Table X-1. Title**

	VMT	Projected % increase Over 2002 baseline (currently)	Proposed Goal's % Increase Over 2002 Baseline	Proposed Projected VMT	Overall VMT Reduction From Current Projections (in billions)
2002 actual	98	N/A	N/A	N/A	N/A
2006 actual	104	6%	6%	104	N/A
2015	120	22%	10%	108	12
2025	137	39%	15%	113	24
2050	179	82%	25%	123	56

VMT = vehicle miles traveled; N/A = not applicable.

The data illustrated by the graph below shows higher rates of VMT growth in cities and on county primary roads. Opportunities to reduce growth of VMT between now and 2015 are strongest in cities and on county primary roads in urbanized areas where alternatives to the single-occupancy vehicle are now most readily available. In time, as a stronger alternative transportation network for travel between cities is developed, there will be opportunities for greater VMT reduction overall.

**Figure X-1. Growth in annual VMT by state-defined legal system (as currently projected)**



**Timing:** Governor and appropriate Cabinet members should initiate planning and administrative activities in 2009 to shape transportation and land development plans and policies that support this goal in 2010 and beyond. Prepare additional enabling legislation for the 2009-10 legislative session supporting the goal.

**Parties Involved:** Michigan Departments of Transportation, Environmental Quality, Labor and Economic Growth, Agriculture and Natural Resources, Michigan local governments, Metropolitan Planning Organizations; Transportation Planning Regions; real estate development and home builders industry, economic development interests, environmental, conservation and community interest groups.

**Key Uncertainties**

One of the most effective ways to limit growth of VMT is through increases in the price of gasoline. In 2002, VMT on all Michigan roads grew more than 2%, but in 2006, when the average price of gasoline was nearly \$1 higher per gallon, VMT grew by only .86%. Whether that trend will continue remains to be seen, however, it is market driven at the present time.

Advancement in alternative fuel technology and the corresponding use of new fuel sources that either reduce or eliminate GHG emissions by vehicles in Michigan could alter the priority to reduce VMT. Therefore, more holistic and comprehensive land use development patterns that

protect our farmland and other natural resources will provide more carbon sinks rather than sources and thereby further help reduce net GHG.

### **Additional Benefits and Costs**

VMT is considered by some economists to be a “leading” economic indicator, one that foreshadows the greater economic trend. In the current economic climate, Michigan cannot afford to impose strict cap limits on VMT. The focus must remain on encouraging infill development and more compact or transit-oriented land use patterns, which will in turn lead to reductions in the growth of VMT.

### **Implementation Mechanisms**

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

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

TBD

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

CO<sub>2</sub>:

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

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

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

**Level of Group Support**

TBD – [blank until MCAC meeting #5]

**Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-7. Transit and Travel Options

### Policy Description

Improve the efficiency of daily travel by creating, enhancing and promoting public transit options such as passenger rail including light rail, trolley, and bus transportation as well as carpooling, vanpooling, biking and walking. These actions will reduce GHG emissions by decreasing, or slowing the growth of, vehicle miles of travel, thus reducing fuel consumption.

### Policy Design

**Goals:** Below are two initial goals for this policy. The final goals will be determined once GHG reductions and associated costs have been analyzed. The baseline year is 2002.

- Double transit ridership by 2015 and double it again by 2025 (line-haul systems).
- Double the number of carpool and vanpool participants by 2015 and double again by 2025.

### Timing:

**Parties Involved:** Michigan legislature, MDOT, regional transit operators, local governments, Amtrak, freight railroads, schools.

### Other:

### Implementation Mechanisms

Below are several actions that would be necessary to achieve the goals listed above.

- Amend Michigan Constitution to provide broader range of funding mechanisms for public transit.
- Build additional park-&-ride lots to encourage and enable increased transit ridership. Ensure these lots have bicycle storage facilities. Also construct carpool lots to provide more opportunity for ridesharing in Michigan.
- Invest in more attractive and efficient transit service to entice additional riders.
- Provide incentives for transit-oriented development and focus growth in areas already served by transit.

### Related Policies/Programs in Place

TBD

### Type(s) of GHG Reductions

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-8. Increase Rail Capacity and Address Rail Freight System Bottlenecks

### Policy Description

Michigan can reduce GHG emissions in the transportation sector by encouraging more energy efficient freight movement. Making or facilitating transportation infrastructure improvements that increase rail capacity, support connectivity, and reduce rail freight system bottlenecks will help accomplish this shift.

Most freight shipment is undertaken by the private sector. Truck transportation is the most common means of moving freight in Michigan, but rail transport is more energy efficient. Whether goods move by rail, truck or other modes, private sector shipping decisions are based on the need to ship those goods at the lowest possible cost within an appropriate time frame.

For short hauls, truck freight is, and will likely continue to be, the mode of choice; intermodal rail freight tends to be most effective for trips of 700-800 miles or longer. As the price of diesel fuel continues to increase, however, rail freight will become more cost-competitive, perhaps at shorter distances. Michigan should be prepared to take advantage of this opportunity for both environmental and economic reasons.

### Policy Design

**Goals:** To reduce transportation sector GHG emissions from freight movement by making system improvements with the goal of increasing tonnage of rail freight traveling to, through and from Michigan an additional 50% by 2020. This goal is subject to analysis of the cost and benefits it would generate.

The most recent data available from USDOT<sup>1</sup> indicates that freight tonnage for shipments to, through, and from Michigan is expected to increase from 752 million tons in 2002 to 1540 million tons in 2035, an increase of 105%. Tonnage is expected to increase on all freight modes, but by far the majority of this increase is anticipated to be truck freight, with a projected 576 million ton increase between 2002 and 2035. In the same period, rail freight tonnage is projected to increase by 67.4 million tons.

Increasing the projected tonnage of rail freight an additional 50% by 2020 potentially shifts a projected 17 million tons of cargo that would otherwise travel by truck. Using the national standard of 80,000 pounds<sup>2</sup> as the upper weight limit for trucks, **this would potentially remove an estimate of at least 200,000 trucks from the roads.**

It is important to recognize that shipping decisions are made by the private sector, and are not under the control of government. Investment to encourage greater use of rail lines and intermodal shipping must be made with that reality in mind.

<sup>1</sup> USDOT State by State Freight Analysis Framework 2.2

<sup>2</sup> Michigan's legal truck weight limits allow for 164,000 pound trucks, but fewer than 5% of the trucks on Michigan's roads travel at that weight.

A variety of approaches will be necessary to accomplish this:

- **Construct Intermodal Terminals:** The use of intermodal containers and intermodal shipping allows many goods to travel by either truck or rail, depending on the length of the trip. Construction or improvement of intermodal terminals in Michigan offers a real opportunity to improve connectivity and encourage the timely and cost-effective shipment of goods by rail rather than truck.
- **Preserve Existing Service:** Michigan's peninsular geography is an obstacle, not only to increasing the capacity of freight rail service, but also to preserving existing rail service, particularly in the northern reaches of the state. As part of any policy to improve rail freight service, attention must also be focused on preserving existing rail lines. In the short-term, this will require continued state investment in these lines, which often do not generate sufficient revenues for the private sector operator to make adequate investments of its own.
- **Preserve Right-Of-Way for Future New Service:** It is unlikely that additional rail freight lines will be constructed in Michigan on new rights-of-way, but for the long term, it is important to keep the option of future rail service available on existing rights-of-way. One means of preserving right-of-way for future rail service, whether freight or passenger, is for the state to continue and expand present efforts to develop abandoned rail lines as trailways.

#### **Timing:**

The Detroit Intermodal Freight Terminal project will consolidate and expand a complex of railroad intermodal terminals in the Detroit metropolitan area in order to accommodate growth through 2025. Improvements will also be made to railroad connections and terminal access roads to improve efficiencies for both trucks and trains. Construction of the project is anticipated to begin in FY2010 and the full build-out will occur over approximately 10 years. The project is a public-private partnership, with the railroads providing approximately 40% of the estimated at \$611.7 million total cost.

The West Detroit Junction rail project involves the construction of a new connecting track at one of the busiest rail junctions in Michigan, which handles 50-60 trains per day. The new track will primarily accommodate Amtrak trains and allow significant improvements in on-time performance. Engineering work for the estimated \$12 million project will begin in Summer, 2008, with construction beginning in 2009.

**Parties Involved:** private sector rail road companies (CN, CX, NS, etc.), auto manufacturers, MDOT, FRA, MTGA, DNR, non-motorized stakeholders

#### **Other:**

### **Implementation Mechanisms**

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

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

TBD

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

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

### **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

### **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

### **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

### **Status of Group Approval**

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

### **Level of Group Support**

TBD – [blank until MCAC meeting #5]

### **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]

## TLU-9. Great Lakes Shipping

### Policy Description

Marine transportation is the most energy efficient surface form of transportation to move cargo over long distances. Michigan's commercial ports typically accommodate 85-95 million tons of cargo annually, most of which are bulk materials including stone, iron ore, coal, and cement. While Great Lakes shipping decisions and services are private sector responsibilities, the public sector has a role in providing navigation channels and related infrastructure.

### Policy Design

#### Goals:

- Reduce transportation sector GHG emissions by maintaining the existing marine infrastructure, including maintaining federal navigation channels to their Congressionally-authorized depths. Without adequate infrastructure maintenance, continued operation of some ports or marine terminals is in jeopardy, with a resultant shift of traffic from marine to truck transportation.
- Improve the marine infrastructure by deepening commercial navigation channels at selected commercial ports to Seaway standard depths. This will allow greater cargo volumes to be carried on each vessel and reduce the number of trips needed.
- Encourage the development or expansion of "short sea shipping" (also known as "marine highway") within the Great Lakes. This could include carrying truck trailers or containers on specialized Great Lakes vessels, which would decrease the number of truck miles driven on the highways.
- Consider the use of ferry boats to move people and cars.
- Consider a biodiesel program at Michigan ports if it is feasible to burn this fuel in marine diesel engines.

#### Timing:

#### Parties Involved:

#### Other:

### Implementation Mechanisms

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

### Related Policies/Programs in Place

TBD

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

CO<sub>2</sub>:

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

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

**Data Sources:** [TBD by CCS on TWG approval]

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

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

## **Key Uncertainties**

TBD – [as needed and approved by the TWGs]

## **Additional Benefits and Costs**

TBD – [as needed and approved by the TWGs]

## **Feasibility Issues**

TBD – [as needed and approved by the TWGs]

## **Status of Group Approval**

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

## **Level of Group Support**

TBD – [blank until MCAC meeting #5]

## **Barriers to Consensus**

TBD – [blank until final vote by the MCAC]