

## Catalog of State Actions Transportation and Land Use (TLU) Policy Working Group

A catalog of state-level, GHG-reducing actions and policy options prepared by the Center for Climate Strategies (CCS) and state based on actions undertaken or considered by states, including regional, state, local and private actions.

### Key To Future Rankings of Options in the Tables that Follow:

Potential GHG Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
<b>High (H):</b> At least 1.0 million metric tons (MMt) carbon dioxide equivalent (CO <sub>2</sub> e) per year by 2020	<b>High (H):</b> \$50 per metric ton CO <sub>2</sub> e (tCO <sub>2</sub> e) or above
<b>Medium (M):</b> From 0.1 to 1.0 MMtCO <sub>2</sub> e per year by 2020	<b>Medium (M):</b> \$5-50/tCO <sub>2</sub> e
<b>Low (L):</b> Less than 0.1 MMtCO <sub>2</sub> e per year by 2020, or 1 MMtCO <sub>2</sub> e by 2050	<b>Low (L):</b> Less than \$5/tCO <sub>2</sub> e
<b>Uncertain (U):</b> Not able to estimate at this time	<b>Uncertain (U):</b> Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

**Definition of “Priorities for Analysis”:**

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

**Tables of State Level Climate Mitigation Actions:**

Table	Sectors Covered
3	Transportation and Land Use (TLU)

**Table 3 - Transportation and Land Use (TLU)**

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
<b>TLU-1</b>	<b>PASSENGER VEHICLE GHG EMISSION RATES</b>					
<b>TLU-1.1</b>	<b>VEHICLE TECHNOLOGY</b>					
1.1.1	Legislate Tailpipe GHG Emission Standards: California Clean Car		L-H	L-H		Often called “Pavley” after the California legislative sponsor.
1.1.2	Legislate ZEV/LEV-2 Implementation		L-L/M	H		
1.1.3	Fund R&D on Low-GHG Vehicle Technology (e.g., fuel cell, hydrogen, etc.)		L-H	L-H		Technology neutral
1.1.4	Encourage, incentivize or mandate add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)		L-H	L-H		
1.1.5	Encourage, incentivize or require purchase of hybrid engine buses		L	L-H		

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1.1.6	Require GHG emission stickers for automobile sales		L-M	L		
1.1.7	Fund infrastructure for plug-in hybrids and promote high energy battery production		L-H	M-H		
1.1.8	Encourage or require development of hybrid technology for garbage and recycling trucks.		L-M	M-H		
<b>TLU-1.2</b>	<b>VEHICLE OPERATION</b>					
1.2.1	Enforce Speed Limits – speed cameras and police		L-M	L-H		Cross-ref MLULC recommendation Chapter 6.9 b
1.2.2	Encourage Vehicle Maintenance, Tire Pressure Maintenance, Driver Training (eco-driving, fuel-efficient shifting)		L-H	L-M		This would include actively promoting programs for improved fuel-efficiency through incentives and other voluntary actions.
1.2.3	Transportation System Management (Intelligent Transportation Systems) – signal synchronization, variable message signs, real-time driver information and feedback		L-H	L-H		
1.2.4	Require tune-up services to include tire pressure and/or oil changes		L-M	L-H		

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.2.5	Passenger vehicle anti-idling program		L-M	L-M		
1.2.6	School education programs		L-H	L-M		eco-driving initiative in driver education. – tying it to license renewal
1.2.7	Mandatory annual vehicle inspections, in conjunction with repair mandates, increased registration fees, and/or a vehicle retirement program		L-H	M-H		Similar to 1.2.2 but makes mandatory
1.2.8	Limit unnecessary stop signs on local streets		L-M	L-H		Yield signs could be used to keep drivers aware of traffic possibilities without requiring a full stop at every corner of the neighborhood.
1.2.9	Encourage or require improved recovery/efficiency of highway vehicle air conditioning fluid		L-M	M-H		
1.2.10	Reduce posted speed limits on interstates/freeways		L-H	L-H		
<b>TLU-1.3</b>	<b>INCENTIVES &amp; DISINCENTIVES</b>					
1.3.1	Procurement of Efficient Fleet Vehicles		L-H	L-H		Government and large commercial fleets
1.3.2	Feebates (state-specific or regional)		L-H	L-H		Measure is revenue-neutral. Note that this overlaps with tailpipe GHG standards and fuel economy standards

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.3.3	CO <sub>2</sub> -based registration fees		L-H	L-H		Note that this overlaps with tailpipe GHG standards and fuel economy standards
1.3.4	Tax Credits for Efficient Vehicles		L-H	L-H		
1.3.5	Vehicle Scrappage		L-M	M		This is an incentive to replace low fuel economy vehicles sooner.
1.3.6	Emission-Based Tolling (discount for clean/fuel-efficient vehicles)		L-H	M-H		Introduced in Germany, Italy, and London
1.3.7	Apply feebates to vehicle dealers(as agents of the manufacturers) for in-state sales		L-H	L-H		Similar to 1.3.2 Manufacturers have long argued that making more efficient vehicles is “too expensive.” This item would directly address their cost issue in a way that would be more under their control than feebates to purchasers.
<b>TLU-1.4</b>	<b>FUEL MEASURES</b>					
1.4.1	Pass Low-GHG Fuel Standard (e.g., renewable) and/or advocate for a federal standard		L-H	L-H		Also known as a low-carbon fuel standard. Michigan Renewable Fuels Commission (MI RFC) 26. The governor should initiate the development of a strategy to enact a low-carbon emission transportation fuels program in Michigan.

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1.4.2	Purchase Low-GHG Fuel for State Fleets (e.g., CNG, biodiesel)		L-H	L-M		
1.4.3	Subsidize Biofuel expansion (biodiesel, CNG, LPG, cellulosic ethanol) and support development of appropriate fuel testing protocols		L-H	M-H		MI RFC 11. Preserve and dedicate a portion of the 21 <sup>st</sup> Century Jobs Fund for applied R&D of renewable fuel production and utilization technology MI RFC 14. Incentives for technology and process improvements for existing biofuel production facilities
1.4.4	Fund Alternative Fuel Infrastructure Development		L-H	L/M-H		MI RFC 15. Increase grants for renewable fuel pumps and infrastructure MI RFC 22-25. Create Green retailers program (tax incentives for E85 and biodiesel sales)
1.4.5	Implement state government E85 use plan		L-H	L-H		
1.4.6	Build electric vehicle charging facilities at selected fueling stations		L	H		
1.4.7	Move forward with the recommendations of the MI Renewable Fuels Commission (RFC)		H	H		

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1.4.7.a	MI RFC 3. Establish the Next Generation Renewable Fuels Feedstock Program		L	L		
1.4.7.b	MI RFC 4. Renaissance zones for production of cellulosic biofuels		L-M	L-M		
1.4.7.c	MI RFC 10. Incentives for early stage next generation fuel production facilities and processing centers		L-M	L-H		
1.4.7.d	MI RFC 29-30. Retain State renewable fuel purchase preferences and promotion		L-M	L-M		
1.4.7.e	MI RFC 31-38. Develop Statewide marketing campaign to promote renewable fuels to consumers, distributors, and fleet managers		L-M	L-H		
1.4.7.f	MI RFC 40, 42. Incentives for the purchase of renewable fuel vehicles (targeting consumers, fleets, and schools)		L-H	L-M		
1.4.7.g	Promote green fuel retailing program		L	L-M		

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
<b>TLU-2 TRAVEL ACTIVITY PATTERNS</b>						
<b>TLU-2.1 LAND USE AND LOCATION EFFICIENCY</b>						
2.1.1	Adopt statewide growth management plan & GHG cap guiding conforming regional transportation & land use plans/programs that meet state-determined GHG budgets and VMT per capita targets		M-H	L		Cross-ref MLULC recommendation 6.12 and 6.21 c
2.1.2	Ensure state policies and capital funding programs evaluate GHG implications to be a model for climate-friendly and energy efficient development patterns		M-H	L		Cross-ref MLULC recommendation 6.18, 6.19, 6.23 and 4.2
2.1.3	Shape public and private investment to maximize GHG reductions and growth management, including Indirect Source Rule to hold development accountable for GHGs, Transfer of Development Rights, Open Space Protection, Coastal Zone Management, Adequate Public Facilities initiatives		M-H	L		Cross-ref MLULC recommendation 4.3 a (1) & (3), 5.20 a, and 6.25 b (3) & (7)

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2.1.4	Provide technical/financial support to local/regional agencies, enhancing technical tools, capacity, and fund Blueprint Planning Grant program		L-H	L-H		Cross-ref MLULC recommendation 6.21 c
2.1.5	Modify & fund reforms of state and local tax and zoning/building codes and policies to support GHG reductions and implementation of State growth plans		M-H	L-M		Cross-ref MLULC recommendation 6.20, 7.1 b (1), 6.13, 6.25 a (4) and 6.25 b (3)
2.1.6	Encourage Michigan Congressional delegation to work for Federal highway, transportation and land use related legislation/programs supporting timely climate change action		L-H	L-M		Cross-ref MLULC recommendation 7.4 a and 7.4 c  Consider referring to CC TWG as a broader policy issue
2.1.7	Connect State economic development incentives to land use, by giving priority to companies that use them to locate in densely populated/urban places.		L-M	L-H		

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2.1.8	Inventory all available discretionary funds in such areas as housing, economic development, infrastructure, schools transportation, and state facilities, and allocate these funds to communities that adopt best practices in land use planning and meet performance standards related to climate and VMT reduction goals.		L-H	L-H		
2.1.9	Focus economic development incentives and public infrastructure funding (such as the Transportation Economic Development Fund) around public transit nodes (or along potential transit corridors).		L-H	L-H		
2.1.10	Authorize multi-jurisdictional TIF districts around transit nodes that will receive state grants for planning and implementation and will be given priority status by the State and metropolitan planning organization for future grants.		L-H	L-M		Emulate New Jersey's Transit Village Initiative and/or Pennsylvania's Transit Revitalization District program.  TIF - tax increment financing

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2.1.11	Incorporate alternative power at certain state transportation facilities with wind turbines or photovoltaic panels.		L	L-H		
2.1.12	Encourage a “shop locally” program to reduce freight related emissions.		L-M	L-L/M		
2.1.13	Support legislation to enable local government to establish urban growth boundaries		L-M	L-M		
2.1.14	Maintain and expand the courtesy patrol program to help on break down clearance		L-M	L		
<b>TLU-2.2</b>	<b>INCREASING LOW-GHG TRAVEL OPTIONS</b>					
2.2.1	Make full use of CMAQ funds—with application reviews considering GHG reductions		L	L-M		
2.2.2	Improve Transit Service (frequency, convenience, quality)		L-M	L-M		Cross-ref MLULC recommendation 4.3 e (1), 7.1 g, and 7.1 h
2.2.3	Transit Marketing and Promotion, (including individualized transit marketing)		L	L-M/H		
2.2.4	Invest additional funds in Bike and Pedestrian Infrastructure		L-H	L-M		Cross-ref MLULC recommendation 4.6 and 5.21 a-b

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2.2.5	Expand Transit Infrastructure (rail, bus, BRT)		L-H	L-H		Cross-ref MLULC recommendation 6.15
2.2.6	Convert/re-stripe current lanes to HOV lanes		L-M	L-H		HOV – high occupancy vehicle
2.2.7	Subsidize and promote car pooling and van pooling		L-M	L-M		
2.2.8	Transit Prioritization (signal prioritization, Bus/HOV lanes)		L-M	L-M		Cross-ref MLULC recommendation 4.3 e (1) and 7.4 a
2.2.9	Set standards for Telecommute, Live-Near-Your-Work and Tele-education		L-M	L-M		Cross-ref MLULC recommendation 6.15
2.2.10	Invest in/provide parking for car-sharing		L-M	L		
2.2.11	Legislate tax policies to promote e-Commerce		L-M/H	L		
2.2.12	CO2 conformity type Program capping CO2 emissions in some form of a mobile budget.		L-M	L-H		If the region/ state doesn't hit the budget then transportation dollars swing from road construction to transit
2.2.13	Provide Guaranteed Ride Home to transit users and car poolers		L	L-M		
2.2.14	Provide incentives to adopt "Best Workplaces for Commuters" standards		L-M	L		
2.2.15	Build park-and-ride facilities		L-M	L-H		

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2.2.16	Adopt a statewide per-capita VMT goal		L-H	L-H		If the region/ state doesn't hit the budget then transportation dollars swing from road construction to transit
2.2.17	Authorize alternative revenue sources for public transit, to be approved by voters regionally.		L-M/H	L-H		
2.2.18	Allow TIF to be used for public transit infrastructure and operations.		L-M/H	L-H		TIF – tax increment financing
2.2.19	Revise the public transit funding formula so the expansion of funding in one metropolitan region does not harm transit in another		L-M	L-M		
2.2.20	Construct roundabouts instead of standard intersections where appropriate.		L-M	L-H		Traffic is able to keep moving, so there's less idling, and these are safer too.
2.2.21	Provide incentives for increased fuel efficient transit operations.		L-M	M-H		
<b>TLU-2.3 INCENTIVES &amp; DISINCENTIVES</b>						
2.3.1	Require Commuter Choice measures/Parking Cash Out		L	L-M		
2.3.2	Implement a VMT Tax		L-H	M-H		Revenue neutral, replacing motor fuel tax

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2.3.3	Pass legislation allowing Pay As You Drive Insurance		L-M	L-H		
2.3.4	Increase the Fuel Tax (w/ targeted use of revenue towards travel alternatives)		L-M	L-H		
2.3.5	Legislate allowing for/requiring Location-Efficient Mortgages		L-M	L-H		
2.3.6	Implement Congestion Pricing (or similar cordon tolls) (w/ targeted use of revenue towards travel alternatives)		L-H	M-H		
2.3.7	Implement state-wide Parking Pricing, excise taxes, and/ or Supply Restrictions		L	H		
2.3.8	Introduce inter-city highway tolls		L-M	M-H		
2.3.9	Introduce Transit Pricing Incentives		L-M	L-H		
2.3.10	Make VMT/GHG Offset Requirements for Large Developments		L-M	M-H		
2.3.11	Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes)		L-M	L-M		
<b>TLU-3</b>	<b>FREIGHT</b>					
<b>TLU-3.1</b>	<b>VEHICLE TECHNOLOGY</b>					

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
3.1.1	Subsidize/provide loans for Vehicle Technology Improvements (e.g., aerodynamics)		L	L-H		
3.1.2	Fund R&D on Low-GHG Vehicle Technology		L-H	L-H		
3.1.3	Mandate Black carbon control technologies (e.g., use of particulate traps, other complementary technologies)		L	M-H		Black carbon can affect climate by absorbing sunlight, heating the air, and thereby altering large scale atmospheric circulation and the hydrologic cycle.
3.1.5	Facilitate Adoption of New Clean Technologies—Rail and Marine Engines		L-M	M-H		
<b>TLU-3.2</b>	<b>VEHICLE OPERATION</b>					
3.2.1	Fund Freight Logistics Improvements/GIS; reduced empty back-hauls		L-M/H	L-M		This would include freight consolidation centers for repackaging partially loaded vehicles.
3.2.2	Enforce Speed Limits		L-M	L-H		
3.2.3	Improve Traffic Flow through bottleneck improvements		L-H	L-M		Cross-ref MLULC recommendation 6.9 b
3.2.4	Allow Increased Size & Weight of Trucks		L	H		(May cause shift from rail to trucks) MI already allows highest levels
3.2.5	Pre-clearance at Scale Houses		L	L-M		
3.2.7	Truck Stop Electrification to reduce idling		L-H	L-M		

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3.2.8	Enforce Anti-Idling ordinances		L-H	L-H		
3.2.9	Encourage or fund truck generators to reduce idling		L-H	L-H		
3.2.10	Pre-clearance at border crossings		L	L-H		
3.2.11	Encourage voluntary speed reductions for Great Lakes shipping and rail traffic		L	L-M		
<b>TLU-3.3 INCREASING LOW-GHG TRAVEL OPTIONS</b>						
3.3.1	Fund Intermodal Freight Initiatives		L-M	H		
3.3.2	Develop port/terminal facilities for Feeder Barge Container Service		L-M	M-H		
3.3.3	Increase Rail Capacity, and Address Rail Freight System Bottlenecks		M-H	L-M/H		Cross-ref MLULC recommendation 7.1 g and 7.4 a
<b>TLU-3.4 INCENTIVES &amp; DISINCENTIVES</b>						
3.4.1	Require Procurement of Efficient Fleet Vehicles (public, private or other)		L-H	L-H		
3.4.2	Provide Incentives to Retire or Improve Older Less Efficient Vehicles – especially drayage trucks		L-H	L-H		
3.4.3	Provide Maintenance and Driver Training		L	L-M		
3.4.4	Increased Emission-Based Truck Tolls or Highway User Fees		M-H	L/M-H		(as per Germany)

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3.4.5	Mandatory annual vehicle inspections, in conjunction with repair mandates, increased registration fees, and/or a vehicle retirement program		L-H	M-H		Similar to 1.2.7 but for medium and heavy duty trucks.
<b>TLU-4 INTERCITY TRAVEL: AVIATION, HIGH SPEED RAIL, BUS</b>						
4.1	Invest in High-speed Rail		L-H	H		Cross-ref MLULC recommendation to: Work with Michigan's congressional delegation to seek federal approaches that treat investment in bus and rail as equally important types of service
4.2	Improve Integrated Aviation, Rail, Bus Networks (planning, governance, and investment)		L-M	L/M-H		Cross-ref MLULC recommendation 6.21 a-c
4.3	Encourage reductions or tighten standards for Aircraft emissions		L-M/H	M-H		
4.4	Encourage reductions or tighten standards for Airport Ground Equipment		L-L/M	L-H		
4.5	Provide incentives for intercity bus service		L-M	L-M		
<b>TLU-5 OFF-ROAD VEHICLES (CONSTRUCTION EQUIPMENT, OUT-BOARD MOTORS, ATVS, ETC)</b>						

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5.1	Incentives for Purchase of Efficient Vehicles/Equipment		L-M/H	L/M-H		
5.2	Fund Improved Operator Training		L	L-H		
5.3	Require Maintenance Improvements		L-M	M-H		
5.4	Mandate Increased Use of Alternative Fuels or Low Sulfur Diesel		M-H	L-H		Cross-ref MLULC recommendation 5.3 a
5.5	Introduce locomotive idling reductions		L/M-H	L		
5.6	Adopt Green Port strategy (Port land-side: Clean-up Port Dwelling and Cargo Handling Equipment Operations)		L	L		
5.7	Adopt two-stroke engine efficiency standards		L-H	L-H		
5.8	Review 2/4 stroke engines to suggest methods to increase efficiency.		M	L-M		