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**Transportation and Land Use (TLU) Technical Working Group
Summary List of Policy Options**

	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)
		2010	2020	Total 2007- 2020		
TLU-1	Light Duty Vehicle Clean Car Program (Lem)	0.0	0.9	5.2	TBD	-\$100
TLU-2	Fuel Efficient Replacement Tires (Batac)	0.0	0.01	0.08	TBD	-\$90
TLU-3	Vehicle MPG Consumer Information (Lem)	Included in TLU-1 and TLU-2				
TLU-4	Financial and Market Incentives for Low GHG Vehicle Ownership and Use (Lem)	Not Quantified				
TLU-5	Growth and Development Bundle (Olson)	0.0	0,047	0,260	TBD	TBD
TLU-6	Alternative Fuels Bundle (change to Low-Carbon Fuels Bundle?) (Lem)	TBD				
TLU-7	Heavy Duty Vehicle Emissions Standards and Incentives (Olson)	TBD				
TLU-8	Truck Anti-Idling and Truck-stop Docking and Electrification (Olson)	0.005	0.012	0.093	TBD	TBD

	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2007–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)
		2010	2020	Total 2007–2020		
TLU-9	Procurement of Efficient Fleet Vehicles (Batac)	<i>Included in other policy options</i>				
TLU-10	Transportation System Management (MDT)	<i>TBD</i>				
TLU-11	Intermodal Freight Efficiencies (Schroerer)	<i>TBD</i>				
TLU-12	GHG Emissions Reductions from Off-Road Engines and Vehicles (Lem)	<i>Not Quantified</i>				
TLU-13	Reduced GHG Emissions from Aviation (Lem)	<i>Not Quantified</i>				

TLU-1 Light Duty Vehicle Clean Car Standards

Policy Description:

Adopt the State Clean Car Program (also known as the “Pavley” standards or California GHG Emission Standards) in order to reduce GHG emissions from new light-duty vehicles. The standards, which must still be approved by US EPA, would take effect in Model Year 2011 (calendar year 2010). Other Clean Car Program elements include standards requiring reductions in smog- and soot-forming pollutants, and promoting introduction of very low-emitting technologies into new vehicles.

New cars and light trucks in all states must comply with Federal emission standards, and, generally speaking, states have the choice of adopting a stronger set of standards applicable in California. In 2005, California finalized a set of standards that would require reductions of GHG emissions of about 30% from new vehicles, phased in from 2009 to 2016, through a variety of means. Eleven states (11) already have adopted the California Clean Car Program standards: California, Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont and Washington.

Policy Design:

- **Goal levels:** Go beyond the federal emissions standards for cars and light trucks within the parameters of the California standards. Note: States can choose between the federal standard or go with the more stringent California standards, in which Montana would pursue either legislative or regulatory action.
- **Timing:** To meet federal compliance, a rule writing process would take place by the appropriate agencies so that Montana can implement the California standards. Regulatory program could begin with vehicle model year 2011.
- **Parties Involved:** Applies to MY 2012 new cars and light trucks. The law would directly affect automobile manufacturers, car dealers, and consumers. Compliance concerns would affect manufacturers and dealers.
- **Other:** The California standards currently are being litigated and have not been approved by the EPA. The timing may be affected by the date of enactment of legislation, likely litigation, and the regulatory process.

Implementation Mechanisms

Institute a regulatory program beginning with vehicle model year 2011.

Related Policies/Programs in place:

TBD

Estimated GHG Savings and Cost Per Ton:

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	0.0	0.9	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cumulative Emissions Reductions (2006-2020)		5.2	MMtCO ₂ e
Cost-Effectiveness	-\$100.00	-\$100.00	\$/MtCO ₂ e

- Data Sources:

CCS, Draft Montana Greenhouse Gas Inventory and Reference Case Projections

- Quantification Methods:

CCS compared results from New England states, California, and a National PIRG model that were obtained using comparable modeling methods. CCS found that while all three modeling efforts were valid, reasonable, and comparable, some of the PIRG model assumptions and methods were relatively conservative, while the California and New England modeling results were relatively optimistic. CCS further refined the PIRG model results consistent with a middle range scenario that produced results less conservative than the PIRG results and less optimistic than the California and New England results.

While PIRG projected a 13.7% reduction in light duty vehicle emissions with this policy for Arizona, a CCS refinement estimated a 15.5% reduction in emissions for Arizona. CCS applied this same refined percentage reduction in emissions to thereference case for Montana.

- Key Assumptions:

The three modeling efforts have established a valid and reasonable method of projecting GHG emissions reductions from this policy. The CCS comparison of the three modeling methods provides some independent professional validation of the models and their results. The key assumption of the emissions reduction projected by CCS is that the most likely scenario for emissions reductions is one that would fall between the more conservative scenario projected by the PIRG model and the more optimistic scenario projected by the California and the New England models.

Key Uncertainties

Fleet turnover rates for light duty vehicles and future patterns of consumer purchase choices between passenger cars and light duty trucks e.g., SUVs.

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-2 Fuel Efficient Replacement Tire Program

Policy Description:

Improve the fuel economy of the light duty vehicle (LDV) fleet by setting minimum energy efficiency standards for replacement tires and requiring that greater information about Low-Rolling Resistance (LRR) replacement tires be made available to consumers at the point of sale. Snow and mud tires LRR tires are currently available and tire manufacturers, such as Michelin, are currently researching and developing fuel efficient “all weather” replacement tires.

Vehicle manufacturers currently use LRR tires on new vehicles, but they are not easily available to consumers as replacement tires. When installing original equipment tires, carmakers use LRR tires to meet federal automobile fuel economy standards (CAFÉ). When replacing the original equipment tires, consumers often purchase less fuel-efficient tires and potentially, more costly tires (depending on annual vehicle miles traveled). Currently, tire manufacturers and retailers are not required to provide information about the fuel efficiency of replacement tires.

An appropriate state agency would initiate a fuel efficient tire replacement program. The program would include consumer education, product labeling, and minimum standards elements.

These programs would be developed under a rule development process. All programs would incorporate the best scientific information, including the test results of tires conducted by the tire manufacturers, the California Energy Commission, and the National Academy of Sciences.

Policy Design:

Goal levels: Establish voluntary energy efficiency standards that achieve an average 4.5% gain in fuel economy.

Timing:

By 2009, the State or appropriate agency will:

- Initiate a fuel efficient tire replacement program for the state fleet if all season/all weather tires are available and are incorporated

into legislatively approved rental rates.

- Establish voluntary energy efficiency standards for replacement tires.
- Develop a marketing program for fuel efficient replacement tires.

By 2011, the State or appropriate agency will:

- Ensure that all tires replaced on state-owned and leased vehicles will be LRR tires, if available for the vehicle type and are rated for all season/weather service.
- Establish legislation to set LRR standards for tires with mandatory manufacture labeling.

Parties Involved: MT Dept. of Environmental Quality, MT Dept. of Transportation, LRR Manufacturers, Tire Distributors, Montana University System

Implementation Mechanisms

The program would include consideration of the technical feasibility and cost of such a program, the relationship between tire fuel efficiency and tire safety, potential effects upon tire life, and impacts on the potential for tire recycling. In addition, the program would exempt certain classes of tires that sell in low volumes, including specialty and high performance tires.

The minimum standard is likely to be less stringent than the energy efficiency of original tires provided by the automobile manufacturers on new purchase vehicles. Such a regulation would improve the fuel efficiency of the overall LDV fleet, but not necessarily the fuel efficiency of all tires since consumers would still make choices in the marketplace. The replacement tires in the future would be on average more fuel efficient than those historically purchased, but are likely to be on average not as fuel efficient as the tires included as original equipment by the automobile manufacturers.

Information and Education:

Provide information to general public and commercial businesses (i.e. taxi and food delivery services) that use light-duty vehicles for daily business that the improved fuel efficiency is directly related to decreased rolling resistance. Information on the potential annual costs savings using LRR tires would also be provided. For example, a car averaging 15,000 miles per year would have fuel savings of over \$80 (at \$2.25 per gallon). A chart of recommended tire models would be included with information on

product labeling and minimum standards elements. Best scientific information including the results from tests of tires conducted by the tire manufacturers, the California Energy Commission, and the National Academy of Sciences would be reviewed and incorporated.

The manufacturers of the LRR tires would be contacted to encourage promotion of their relevant products through regional newspaper and television advertising. The producers of LRRs may freely provide promotional materials.

Promotion and Marketing:

The state will lead by example by initiating a fuel efficient tire replacement program, including all weather fuel efficient tires and legislatively approved rental rates for state vehicles, both owned and leased.

Over time, all state fleet tires in need of replacement will be changed to LRR tires, if available for the vehicle type and season.

Establish voluntary LRR standards that achieve an average 4.5% gain in fuel economy.

Encourage local/county governments to act consistently with and support state procurement on their behalf.

Encourage federal agencies located within the state to act accordingly with and support state actions.

Encourage businesses that depend upon vehicles to conduct daily business to act accordingly with and support state actions.

Develop a marketing program with tire dealers and consumers to encourage the purchase of LRR tires. This effort might include a voluntary labeling program for tire fuel efficiency.

Encourage the Montana university system to conduct research on alternative non-combustible applications for used tires.

All state-supported programs would have dedicated detailed web sites. In addition to information and materials, program participation by the various governmental agencies and individual businesses (i.e., success stories) would also be documented and extolled.

Technical Assistance:

Contact the LRR manufacturers and tire distributors to coordinate objectives and obtain technical support for outreach materials.

Funding Mechanisms and/or Incentives:

Replacement of tires on state fleet vehicles is already budgeted through the MDT annual funding processes.

Voluntary and or Negotiated Agreements:

Work with the manufactures and affected parties to achieve objectives with flexibility of the timelines.

Codes and Standards:

The state of California has developed substantial information pertaining to LRR tires due to legislative actions that require tires to be replaced with more efficient ones. Associated documentation identifies testing methods and LRR standards. The appropriate state agency can review the information and establish suitable Montana standards.

Pilots and Demonstrations:

Coordinate with product developers to help them promote their technologies.

Reporting:

The state will develop a system for tracking purposes so that the state can eventually determine the turnover to LRR tires and the benefits achieved from the conversion. A simple tracking system would be established relatively easily by contacting the primary tire distributors of the major Montana cities on an annual basis and estimates can be gathered from their inventories.

Enforcement:

No enforcement actions are necessary initially since this is a voluntary program. After the mandatory labeling becomes in effect, spot checks at the primary tire distributors in the main Montana cities would be annually conducted by the county health departments and the state staffs.

Related Policies/Programs in place:

In October of 2003, the state of California adopted the world's first fuel-efficient replacement tire law (AB 844). This law directed the California Energy Commission to develop a State Efficient Tire Program that includes the following issues: (1) develop a consumer education program, (2) require that retailers provide labeling information to consumers at the point of sale, and (3) promulgate through a rule development process a minimum standard for the fuel efficiency of replacement tires sold. The California rule development process began January 2007.

To address varying weather and seasonal conditions, Michelin Tire Manufacturers are currently researching and developing “all-weather tires.”

Estimated GHG Savings and Cost Per Ton:

Assuming 100% Market Penetration (Regulatory Approach)

	2010	2020	Units
GHG Emission Savings	n/a	0.27	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cum. Reducts. (2006-2020)	n/a	1.51	MMtCO ₂ e
Cost-Effectiveness	-\$90	-\$90	\$/MtCO ₂ e

Assuming 10% Market Penetration

	2010	2020	Units
GHG Emission Savings	n/a	0.03	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cum. Reducts. (2006-2020)	n/a	0.15	MMtCO ₂ e
Cost-Effectiveness	-\$90	-\$90	\$/MtCO ₂ e

Assuming 5% Market Penetration

	2010	2020	Units
GHG Emission Savings	n/a	0.01	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cum. Reducts. (2006-2020)	n/a	0.08	MMtCO ₂ e
Cost-Effectiveness	-\$90	-\$90	\$/MtCO ₂ e

- Data Sources:

Tires and Passenger Vehicle Fuel Economy, Transportation Research Board/National Research Council, 2006; California State Fuel-Efficient Tire Report, California Energy Commission, January 2003.

- Quantification Methods:

CCS evaluated and compared a series of existing assessments, as follows:

At the request of the United States Congress, the National Research Council of the National Academy of Sciences (NRC/NAS) conducted a study of the feasibility of reducing rolling resistance in replacement tires. The 2006 NRC/NAS study made the following conclusions:

“Reducing the average rolling resistance of replacement tires by a magnitude of 10 percent is technically and economically feasible.

Tires and their rolling resistance characteristics can have a meaningful effect on vehicle fuel economy and consumption.

A 2003 study commissioned by the California Energy Commission found that about 300 million gallons of gasoline per year can be saved in that state with lower rolling resistance tires. A set of four low rolling resistance tires would cost consumers an estimated \$5 to \$12 more than conventional replacement tires. The fuel-efficient tires would reduce gasoline consumption by 1.5 to 4.5 percent, saving the typical driver \$50 to \$150 over the 50,000-mile life of the tires. Consumers would save more than \$470 million annually at current retail prices or approximately \$1.4 billion over the three-year lifetime of a typical set of replacement tires.

CCS estimated the reduction in GHG emission from this policy using the Montana Greenhouse Gas Inventory and Reference Case Projections as a baseline. Using an emission reduction factor of 4.5% (the upper end of the range of reported fuel conservation due to LRR replacement tires).

- Key Assumptions:

The estimate of costs associated with LRR replacement tires account for faster tire wear (assuming that tires have lower tread) and an increase in the cost of production that is passed through to consumers. According to the NRC/NAS study, consumers would pay an additional \$12.00 per year to replace tires (including installation), and they would pay an additional \$1.00 per tire due to increased production costs.

Key Uncertainties

The low rolling resistance fuel efficient tires program is based upon existing off-the-shelf

technologies and products that already exist in the consumer marketplace. These tires are already available in the marketplace, and are comparable with the tires included as original equipment on newly purchase light duty vehicles.

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-3 Consumer Information on Vehicle Miles Per Gallon (MPG)

Policy Description:

Provide consumers with information about the fuel efficiency in relation to the purchase, maintenance, and operation of their vehicles. Consumers would receive real-time information on the miles per gallon (MPG) while their vehicles are in operation and alerts when their tire pressure is too low (i.e. devices like Air Alert Valve Caps). In addition, consumers would receive public education and information relating to the impact that vehicle maintenance practices have on the operation of their vehicles. Finally, consumers would be encouraged to consider the mpg of vehicles before and at the time of purchase of their vehicles.

Policy Design:

- **Goal levels:** Increase consumer awareness by 100% by 2020.
- **Timing:** Program would begin in 2008, with program expansion as resources are made available.
- **Parties Involved:** MT Dept. of Environmental Quality, MT Dept. of Transportation, DMV, Product Manufacturers, Product Distributors, Montana University System

Implementation Mechanisms

Information and Education:

The manufacturers of such energy saving technologies (i.e. Scan Gauge, Air Alert Valve Cap, etc.) would be contacted to encourage promotion of their relevant products through regional newspaper and television advertising in addition to working with potential distributors (auto shops, car dealerships, electronic stores) to provide information about the products. In addition to these technologies, vehicle maintenance and operations that have effects on the fuel efficiency of private vehicles can also be implemented in Driver Education Courses.

Promotion and Marketing:

The state will lead by example by initiating a consumer information program for energy efficient driving practices and devices for all state vehicles, both owned and leased.

Establish consumer information for both add-on technologies and original equipment that provide real-time MPG information, tire pressure valves, early and late engine check warnings lights, etc.

Encourage local/county governments to act consistently with and support state procurement on their behalf.

Encourage federal agencies located within the state to act accordingly with and support state actions.

Encourage businesses that depend upon vehicles to conduct daily business to act accordingly with and support state actions.

Develop a marketing program with vehicle and product manufacturers and consumers to encourage the purchase of energy saving technologies. This effort might include a voluntary labeling program for “green purchases.”

Encourage the Montana university system to conduct research on energy saving technologies and its effects on changing consumer behavior.

MDT will use its website to post consumer-friendly information or links to information on fuel efficiency in relation to the purchase, maintenance, and operations of vehicles.

All state-supported programs would have dedicated detailed web sites. In addition to information and materials, program participation by the various governmental agencies and individual businesses (i.e., success stories) would also be documented and extolled.

Technical Assistance:

Contact the product manufacturers and distributors to coordinate objectives and obtain technical support for outreach materials.

Funding Mechanisms and/or Incentives:

TBD

Voluntary and or Negotiated Agreements:

Work with the manufactures and affected parties to achieve objectives with flexibility of the timelines.

Codes and Standards:

The appropriate state agency can review the technical and feasibility information and establish suitable Montana standards.

Pilots and Demonstrations:

Coordinate with product developers to help them promote their technologies both on the shelf and on the internet.

Reporting:

The state will develop a system for tracking purposes so that the state can eventually determine the effects on consumer choices and driving behavior and the benefits achieved from the consumer information program. A simple tracking system would be established relatively easily by contacting the primary vehicle dealerships and auto shops of the major Montana cities on an annual basis and estimates can be gathered from their inventories.

Enforcement:

No enforcement actions are necessary initially since this is a voluntary program.

Related Policies/Programs in place:

TBD

Estimated GHG Savings and Cost Per Ton:

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	Included in TLU-1 and TLU-2	Included in TLU-1 and TLU-2	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cumulative Emissions Reductions (2006-2020)			MMtCO ₂ e
Cost-Effectiveness			\$/MtCO ₂ e

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD



**TLU-4 Financial and Market Incentives for Low GHG
Vehicle Ownership and Use**

Materials In Process

TLU-5 Growth and Development Bundle

Policy Description

This bundle of options encompasses several components intended to reduce GHG emissions through promotion of multi-modal transit options and land use practices and policies. These policies contribute to GHG emission reductions by reducing vehicle trips and vehicle miles traveled.

Potential actions include the following programs and program elements:

1. Infill, densification, and brownfield redevelopment
2. Mixed-use and transit-oriented development
3. Smart growth planning, modeling, and tools
4. Targeted open space protection
5. Expanding transit infrastructure and service
6. Expand transportation choices - Create a proactive planning and transportation investment process to help cities and counties plan for and invest in efficient multimodal transportation networks in and around existing towns.

In general, neighborhood center development/redevelopment options are recommended to reduce VMT resulting from inefficient development patterns and locations. Smart Growth principles should be implemented to manage the location, density, development pattern, infrastructure, and meet basic human needs of new growth. Options for achieving these principles include:

- Directed Growth – Enable local governments to direct growth to locations that will be most cost effective to serve and result in lower VMT. This goal can be achieved through a combination of education, partnerships, funding programs, and policy changes at state and local levels.
- Market Incentives – Create market incentives to encourage voluntary adherence to Smart Growth principles. Collaboration between the State and private lending institutions would be required to identify and implement lending policies that create incentives for Smart Growth developments.
- Alternative Revenue Sources – Reduce local governments’ reliance on property tax to fund public capital improvements, operating, and maintenance needs, thus eliminating the incentive to expand the jurisdictions’ property tax base (sprawl). Provide alternative funding sources to schools and local governments.

Policy Design

Goal levels: Implement a package of policies and incentives to achieve a 3% reduction in urban passenger vehicle VMT below the 2020 baseline.

Timing:

- State policy changes should be promoted during the 2009 legislative session, but the building of a widespread coalition to provide the necessary political will should begin immediately.
- Actions that do not require legislative changes or securing new funding sources should begin within 3 months after the adoption of this policy.

Parties:

- MDT, Governor’s Office, MACO, Department of Commerce, League of Cities and Towns, Montana Smart Growth Coalition, EPA Smart Growth Division

Implementation Mechanisms

Access Management and Cooperative Planning

- MDT should continue and strengthen its access management program, including its Systems Impact Analysis Process. The order of priority for this planning should focus on urban and suburban highways in and near Montana’s fastest growing areas. Implementation will also consider policy changes that would enable imposition of developer impact fees. In the long term, such fees could provide significant cost savings that could be redirected toward the city-county multimodal transportation funding.
- MDT should continue and expand cooperative transportation planning efforts in Montana’s communities, in part to help cities and counties develop 20 year multimodal transportation plans that are integrated with local land use plans. Future funding sources for this assistance could include Federal discretionary transportation funds, such as the Federal Surface Transportation Program (STP) and other programs.
- Support local option sales taxes to assist in the development of transportation and other infrastructure in and around existing towns in accordance with growth policies and the city-county multimodal transportation plans.

Directed Growth

- Fund a State-level Community Technical Assistance Program to provide Smart Growth model codes that create location efficient communities designed to encourage the use of non-motorized transportation and public transit. The

Program would also compile and distribute information on Smart Growth design standards and funding sources.

- Require all elementary schools to be located on sites with good pedestrian and bicycle access.
- Require all government work centers to locate in the central business district (CBD) of municipalities or, if not the CBD is not possible, in a suburban location with good pedestrian, and bicycle access.
- Create a Governor's Smart Growth Council consisting of representatives from the Montana Association of Realtors, Montana Homebuilders Association, Montana Association of Planners, and other entities to develop and distribute information on the GHG savings and other cost advantages of implementing Smart Growth Principles.
- Require local Growth Policies to include a database of infill properties, including those that qualify as brownfields, and strategies for redevelopment.
- MDT should continue to expand existing transit service and create new transit services, taking advantage of Federal funds made available through SAFETEA-LU.

Market Incentives

- Enable and encourage local governments to adopt financial incentives for infill or location efficient development such as fast track permitting, reduction of building permit fees, and reduction of system development or impact fees.
- Encourage lending institutions to adopt location efficient mortgage principles, such as recognizing transportation cost savings when calculating a household's borrowing ability.

Alternative Revenue Sources

- Adopt a local option tax to help local governments fund public capital improvements, operation and maintenance.
- Adopt alternative funding sources for schools.
- Increase gas tax distribution to local governments.

Related Policies/Programs in Place

TBD

Estimated GHG Savings and Cost per Ton

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	0	0.047	MMtCO ₂ e
Net Present Value (2006-2020)	TBD	TBD	\$ Million
Cumulative Emissions Reductions (2006-2020)	0	0.260	MMtCO ₂ e
Cost-Effectiveness	TBD	TBD	\$/MtCO ₂ e

Data Sources

Quantification Methods

- Assume policy bundle results in 3% reduction in urban area LDV VMT.
- Calculate impact on total baseline transportation GHG emissions based on 3% reduction in baseline urban area LDV VMT in 2020.

Key Assumptions

- Benefits (VMT and GHG reduction) increases linearly beginning in 2011 up to 2020.

Key Uncertainties

Quantifying the effectiveness of land use mixing and densification in reducing Vehicle Miles Traveled (VMT) and CO₂ emissions is difficult.

Additional Benefits and Costs

Land use policies such as the densification of developed land, mixing of compatible land uses and other urban design measures have beneficial “spin-offs” for other strategies. Land use based policies further mode switching policies because these policies help create an environment that is easier served by transit, biking and walking.

Feasibility Issues

Land use changes will not have a large impact on transportation systems or CO₂ emissions over the short-term. However, over longer time spans, land use changes aimed at creating denser, mixed-use settlements may offer important opportunities to reduce transportation energy intensity and CO₂ emissions.

Land use based measures targeting densification and land use mix will affect only urban areas as they have the characteristics to address densification. The effectiveness of these

policies also depends upon the willingness of local governments – largely in urbanized areas – to implement land use policies and regulations. In addition, policies that affect land use and transportation take a long time not only to implement, but also a long time to accrue their effects. Typically, transit oriented development strategies take more than 20 years to implement.

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-6 Alternative Fuels Bundle

Materials Under Development

TLU-7 Heavy Duty Vehicle GHG Emissions Standards and Incentives

Materials Under Development

TLU-8 Heavy Duty Vehicle Anti-Idling/Truckstop Electrification

Policy Description

This policy option involves reducing the amount of time that trucks and buses idle. It would involve promoting and expanding the use of technologies that reduce long-term heavy-duty vehicle idling, with an emphasis on encouraging the use of innovative truck stop electrification. It would also develop and implement a statewide ordinance banning idling by heavy-duty vehicles in most situations.

Truck stop electrification involves truck plazas that are equipped with electrification systems that allow drivers to shut off their engines and draw electrical power and in some cases, heating, cooling, and communication and entertainment options from a ground source. Different systems may or may not require the purchase of an adaptor to connect to the tractor.

In addition to truck stop electrification, other available technologies that reduce heavy-duty vehicle idling include automatic engine shut down/start up system controls, auxiliary power units, and direct fired heaters. Auxiliary power units are portable, truck-mounted systems that can provide climate control and power for trucks without idling. These systems generally consist of a small internal combustion engine (usually diesel) equipped with a generator and heat recovery system to provide electricity and heat. For air conditioning, an electrically powered air-conditioner unit is normally installed in the sleeper, although some systems use the truck's air-conditioning system. Direct fired heaters provide only heat to the cabin and engine.

Statewide and local ordinances would be developed and implemented banning long-term idling by heavy-duty vehicles in certain situations. The ordinances would be designed to be easily enforceable by the appropriate state and local agencies. The ordinances would likely include exceptions for situations when idling is unavoidable, such as cold weather, traffic delays, and other idling that occurs for public health and safety reasons (such as emergency vehicles).

A dedicated state funding stream for enforcement would be identified in order for this measure to be successful in reducing vehicle idling and the resulting reductions in GHG emissions.

Policy Design

- **Goal levels:** Reduce fuel consumption from heavy-duty diesel vehicle idling at rest areas and truck stops in two steps: 40% in the Phase I and 85% in Phase II.

Require that 85% of the transportation services contracted with a public school district to transport students using heavy-duty vehicles must have anti-idling policies and/or in-house electrification systems to reduce fuel consumption and emissions from idling.

- **Timing:** Establishment of local ordinances will be strongly supported by the state, but local governments will need to determine their time schedules.
 - Installation of electrification systems at truck stops and rest areas by 2011.
 - Have statewide ordinance in place by 2011 with relevant documentation available for distribution.
 - The two-stage time periods for the reduction in heavy-duty diesel vehicle idling are 2010 (Phase I) and 2020 (Phase II).
 - Transportation services contracted with a public school district and uses heavy-duty vehicles to transport students must have anti-idling rules and/or electrification systems installed by 2011.
- **Parties Involved:** MT Dept. of Environmental Quality, MT Dept. of Transportation, Communities, Counties, MT Metropolitan Planning Organizations, Relevant Public Educational Parties, Truck Stop Owners/Managers, Trucking Associations, School Districts, Chartered Bus Service Companies.

Implementation Mechanisms

The appropriate state agency would provide the general public, trucking industry, trucking associations, and bus companies with information (with a phone number to answer questions) indicating when and where (specified by a map) idling is prohibited, and under what circumstances it is permitted. The benefits of reducing idling, including fuel savings, toxic emission reductions, and GHG reductions would be detailed. A round-the-clock hotline number to call to report violations would also be given.

Encourage trucking companies to do their own proctoring. Reach out to busing companies, school districts, and truck stop owners to educate bus and truck drivers about the idling restrictions. Emphasize the fuel savings benefits, reductions in toxic emissions, and reduced engine wear associated with reducing idling. Provide information to fleet carriers, shippers, retailers, bus companies, school districts, and others involved in the diesel fleet industry indicating the economic benefits, as well as the environmental benefits, of applying idle reduction technologies. Identify best practices within the

industry and recognize companies with these best practices in place within Montana to encourage companies to select these carriers for their shipments.

Develop outreach materials with cost benefits information and toxic diesel health effects in both indoor (cabin) and outdoor ambient air on both children and adults. Outreach materials should also be geared toward making the general public aware of the GHG, toxics, and fuel-saving benefits of eliminating unnecessary idling on personal (passenger) vehicles, as well as on trucks and buses. Expand the school bus idling program based upon the pilots currently being conducted.

Promotion and Marketing:

The state will establish idling time limits for heavy-duty vehicle at various venues (rest areas, truck stops, sporting events, etc.).

The state will develop information packages about the health effects of air pollutants from the idling emissions on human health, particularly the drivers, in and outside the truck cab.

This policy will be supported by the appropriate state agency with a dedicated detailed web site. In addition to information and materials, participation in this policy by the various governmental agencies and individual businesses (i.e., success stories) would also be documented and extolled.

Technical Assistance:

Coordinate with the impacted communities to organize workshops/outreach programs to let them know about technological options that provide alternatives to the need for idling including products for cabin comfort, power for other functions (e.g., refrigerated trucks), and engine warm-up.

Funding Mechanisms and/or Incentives:

Propose legislation to partially fund idling technology loan grants for truck stop electrification and other idle reduction technologies in the state, focusing grants on high idling areas.

Identify a dedicated funding stream that can be used to fund enforcement of local anti-idling ordinances as well as for continued education and outreach. Funding the enforcing agency with an adequate share of the revenue from using the idling reduction facilities would be an option. Federal funds (EPA or DOE) may be available for idle reduction projects. A plan needs to be developed to apply for the funds.

A small tax on diesel fuel might be considered as a means for funding truck stop electrification. Tax credits may be available for installing electrification through the

National Energy Bill. Truck stop owners could offer their own incentives for the use of electrification (e.g., credits for free hours of electrification with the purchase of a specified amount of diesel).

At rest areas, individual meters could measure the amount of energy used by each trucker and the truckers could pay for the energy usages via a currency feed apparatus housed in a safe location from the cost savings derived by the increased fuel efficiency not idling.

Voluntary and or Negotiated Agreements:

Work with regulated entities to promote voluntary compliance assistance through distribution of materials, staff training, etc. Encourage participation in EPA's SmartWay Transport Partnership (or similar programs). The SmartWay Transport Partnership is a voluntary collaboration between the EPA and the freight industry designed to increase energy efficiency while significantly reducing greenhouse gases and air pollution.

Codes and Standards:

Include proper language in local and state ordinances so that the agency with enforcement responsibilities is clearly delineated and has full authority to enforce the ordinances. The language should also include any exemptions to the idling policy, which can be easily observed. In developing the statewide anti-idling ordinance, the EPA's recent Model State Idling Law should be reviewed for potential ordinance language. For example, the EPA model rule contains the following language exempting vehicles used for emergency and public safety purposes: "A police, fire, ambulance, public safety, military, other emergency or law enforcement vehicle, or any vehicle being used in an emergency capacity, idles while in an emergency or training mode, and not for the convenience of the operator."

Pilots and Demonstrations:

Coordinate with product developers to help them promote their technologies. Investigate availability of funds for pilot or demonstration projects on idle reduction technologies from EPA, U.S. Dept. of Energy, and U.S. Dept. of Transportation. If funding is available, develop a pilot program to evaluate the effectiveness of various idle reduction technologies, including implementation of truck stop electrification and expanded school bus idling program. Evaluate the effectiveness of the pilot programs before implementing on a broader scale.

If funding is not available for an in-state pilot demonstration, review other states' successful anti-idling programs (currently sixteen) to extract all information applicable to a Montana program.

Reporting:

Develop a system for tracking violations so that the state can eventually determine compliance rates. The amount of energy consumed from heavy-duty vehicle electrification at the rest areas and truck stops would be monitored to determine the amount of emissions reductions based on “before” and “after” installation analysis.

Enforcement:

Phase enforcement program to initially conduct outreach (Phase 1), provide warnings for a limited period of time (Phase 2), then issuance of tickets (Phase 3).

Related Policies/Programs in Place

Lewis and Clark County has Rule 3.101, which applies to both diesel and locomotive engines that limits the amount of idling time when the health department has declared poor air quality (idling is limited to 2 hours within any 12-hour period).

Currently, the MDEQ has established a voluntary program called *Clean Air Zone Montana*. This program is aimed at reducing school children's exposure to vehicle emissions by discouraging idling of school buses and other vehicles, and helping schools obtain funding for bus maintenance and retrofitting.

This option also supports progress toward EPA Strategic Plan Goal 1, Clean Air and Global Climate Change, Objective 1.1, Healthier Outdoor Air. The Regional Geographic Initiatives Program enables the Regions to work with states, local governments and others in specific geographic areas on problems identified as high priorities by the Regions.

Approximately 16 states and dozens of local counties have promulgated laws that restrict the amount of time that a vehicle can idle its main engine. For a list of state and local anti-idling laws compiled by EPA in April 2006, go to <http://www.epa.gov/smartway/documents/420b06004.pdf>. EPA has also released a model for a state idling law, based on workshops with trucking industry stakeholders and state environmental agencies. See: <http://www.epa.gov/smartway/documents/420s06001.pdf>.

Estimated GHG Savings and Cost or Cost Savings

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	0.005	0.012	MMtCO ₂ e
Net Present Value (2006-2020)	TBD	TBD	\$ Million
Cumulative Emissions Reductions (2006-2020)	0.005	0.093	MMtCO ₂ e

Quantification Methods

Total truck stops in state with truck parking	36	
Number with TSE	0	
Number without TSE	36	
Average spaces per truck stop	32	
Estimated occupancy per night	80%	
Idling hours per truck per night	5.9	
	Phase I (2010)	Phase II (2020)
Percent of idling reduced by TSE	40%	85%
Fuel/engine idle hr (AC)	1	1
Fuel/engine idle hr (no AC)	0.6	0.6
% of Idling hours with AC	25%	25%
% of Idling hours without AC	75%	75%
Reduction in idling hours/yr	793,866	1,686,966
Reduction in fuel use/yr	555,706	1,180,876
MMBTU (million)	0.0771	0.1638
MMT C	0.0015	0.0031
MMTCO ₂	0.0054	0.0115
N ₂ O (MMTCO ₂ Eq.)	0.000005	0.000011
CH ₄ (MMTCO ₂ Eq.)	0.000000	0.000001
Total Reduction (MMTCO ₂ Eq.)	0.005	0.012

Key Assumptions

- Benefits increase linearly between 2010 and 2020.

Key Uncertainties

- Number of overnight truck parking spaces in Montana.
- Utilization of overnight truck parking spaces

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-9 Procurement of Efficient Fleet Vehicles

Policy Description:

Montana state and local government agencies could “lead by example” by enacting procurement policies and or joining the EPA SmartWay program and utilizing the SmartWay Upgrade Kits that result in adoption of lower emitting vehicle fleets. There are three primary components of the EPA SmartWay program: creating partnerships, reducing all unnecessary engine idling, and increasing the efficiency of light duty and heavy duty vehicles, rail, and intermodal operations.

Targets are listed under the Policy Design section and will be based on availability of energy saving technologies and overall efficiency of the life of the vehicle.

This policy option strengthens Montana’s commitment to reduce GHG emissions through fuel efficiency in vehicles owned by the state while encouraging local agencies and private fleets to also lead by example.

Policy Design:

This is an enabling option that would have the State government lead by example, ensuring that its own fleet of vehicles meets or exceeds the targets set for the State as a whole, while providing available means for all public and private vehicles to also exceed these standards on a voluntary basis.

- **Goal levels and Timing:** Where the fuel and vehicle-type requirements of TLU-1, TLU-6, TLU-7 and TLU-8 are higher, the State vehicle fleet would conform to the higher requirements.

Immediately, the State or appropriate agency will:

- Identify barriers to the purchasing of hybrid vehicles and research and develop solutions to procure hybrid or other lower GHG emitting vehicles in the state.
- Ensure the overall state of Montana fleet considers EPA fuel efficiency rating calculated over the life cycle of the vehicles purchased for the fleet.
- Ensure biofuels are purchased for the state motorpool fleet wherever they are available and if applicable for the vehicle type.

By 2020:

- 50% of all vehicles must be “fuel efficient,” meeting on average, a higher mpg, for the State’s heavy duty and light duty vehicle fleets.
- **Parties Involved:** Montana state and local government agencies, private industries and fleets, trucking industry.

Implementation Mechanisms

This policy option would be implemented by executive order.

Participation in EPA SmartWay Program:

State and local agencies with vehicle fleets could sign on as SmartWay carrier partners. They would then measure their environmental performance with the fleet model and come up with a plan to improve that performance. The partnership provides information and suggested strategies to improve fuel economy and environmental performance of vehicle fleets.

EPA SmartWay Shippers: State or local agencies that buy transportation services, or ship goods could sign on as SmartWay shippers. As shipper partners, state agencies would seek to select SmartWay partners when they purchased the services of carriers. One way that the State could help would be to add SmartWay certification to the list of factors that they may consider when selecting carriers. Alternatively, they could encourage the carriers that they do business with to join the partnership. Shippers can also implement direct strategies, for instance, developing no-idle policies for their loading areas.

SmartWay Affiliates: State and local agencies could sign onto SmartWay as affiliates. As affiliates, they would help to distribute information on the program to interested parties. This could be as easy as putting a link on their web site, or it could involve a more active role.

EPA SmartWay Loan Initiative: Incentives to reduce emissions in the trucking industry are also available through the EPA SmartWay Loan Initiative. The U.S. Environmental Protection Agency is partnering with the Small Business Administration to make loans available to purchase SmartWay Upgrade Kits. This loan initiative uses SBA Express Loans and partners with Bank of America, Business Loan Express, Superior Financial Group and other SBA lenders to help small trucking companies finance the purchase of SmartWay Upgrade Kits. Participating lenders will provide quick approval and affordable monthly payments. Small trucking firms can borrow from \$5,000 to \$25,000, with no collateral, an easy on-line or telephone application, and flexible loan terms.

SmartWay Upgrade Kits: A variety of fuel and emissions-saving technologies, and typically consist of engine idle reduction technology, low rolling resistance tires, improved aerodynamics and exhaust after-treatment devices. In tests, these kits can reduce fuel consumption by 10 to 15 percent saving more than \$8,000 in fuel costs

annually. They also reduce pollution: carbon dioxide and nitrogen oxide emissions are cut 10 to 15 percent, and when a kit includes an exhaust after-treatment device, particulate matter emissions are reduced by 25 to 90 percent.

Related Policies/Programs in place:

Arizona, New Mexico

Estimated GHG Savings and Cost Per Ton:

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	Included in TLU-1, TLU-6, TLU-7, TLU-8, TLU-11	Included in TLU-1, TLU-6, TLU-7, TLU-8, TLU-11	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cumulative Emissions Reductions (2006-2020)			MMtCO ₂ e
Cost-Effectiveness			\$/MtCO ₂ e

- Data Sources: **TBD**
- Quantification Methods: **TBD**
- Key Assumptions: **TBD**

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-10 Transportation System Management

Materials under Development

TLU-11 Intermodal Freight Efficiencies

Materials Under Development

TLU-12 Off-Road Engines and Vehicles GHG Emissions Reductions

Policy Description

Off-road (also called non-road) engines and vehicles are significant emitters of greenhouse gases (GHG) and consumers of petroleum based fuels. Emissions from off-road engines can be reduced by adoption of GHG emissions standards and through retrofit technologies. The efforts would be expected to be consistent with efforts to reduce off-road emissions of other regulated air pollutants. In the state of Montana, these reductions would affect the following equipment categories: airport service, construction, industrial, lawn and garden, light commercial, logging, recreational (including snowmobiles and snow coaches), and recreational marine.

Policy Design

Goal levels: After the appropriate state agency has concurred, the state will adopt carbon dioxide (CO₂) emissions standards for the various off-road equipment categories based on engine horsepower, within two years of when a municipality or another state has established such regulations.

Timing:

- The state would lead by example by initiating a diesel retrofit program for 90% of the state-owned and leased off-road engines and vehicles by 2009.
- The state will implement a voluntary diesel retrofit program by 2009.
- The state will develop information about the emissions reductions from retrofit technologies on the various off-road engines and vehicles by 2009.

Parties Involved: Relevant industries, airports, general public, MT Dept. of Transportation, MT Dept. of Environmental Quality, local/county/federal governmental agencies.

Implementation Mechanisms

- Emission control technology is now available to retrofit or rebuild existing engines for any kind of off-road diesel engine including marine.
- The state and some counties have the regulatory authority to require air pollution control measures in areas designated by the US Environmental Protection Agency (EPA) as “nonattainment” for air pollution under the federal Clean Air Act.

Exhaust emissions from engine combustion can be identified through technical studies and targeted by state or county air pollution control measures.

- Construction contracts funded by the state and local communities would be required to use best available control technology (BACT) and other emissions mitigation measures for all diesel engines.

Promotion and Marketing:

- The state would lead by example by initiating a diesel retrofit program for these equipment categories owned or leased by the state.
- Encourage local/county governments to act consistently with and support state actions.
- Encourage federal agencies located within the state to act accordingly with and support state actions.
- Encourage private businesses that use these types of equipment within the state to act accordingly with and support state actions.
- Encourage the airports located in the primary Montana cities to act accordingly with and support state actions.
- The state will develop information about the emissions reductions from retrofit technologies on the various off-road engines and vehicles.
- Implement a voluntary diesel retrofit program by an appropriate state agency; state tax incentives will be available at a later date corresponding to the new federal emissions standards of particulates and nitrogen oxides.
- The state will establish CO₂ emissions standards for the various equipment categories based on engine horsepower.
- All state-supported programs should have dedicated, detailed web sites. In addition to information and materials, program participation by the various governmental agencies and individual businesses (i.e., success stories) would also be documented and extolled.

Technical Assistance:

- Contact the manufacturers of the various off-road emission reductions technologies to coordinate objectives and obtain technical support for outreach materials.
- The EPA has also developed the Voluntary Diesel Retrofit Program with a designated web site. The program will address pollution from diesel construction equipment and heavy-duty vehicles that are currently on the road today. The program web site is designed to help fleet operators, air quality planners in

state/local government and retrofit manufacturers understand this program, and obtain the information they need to create effective retrofit projects.

Funding Mechanisms and/or Incentives:

- The appropriate state agency would establish a voluntary program to retrofit diesel engines in a rebate program.
- Users of off-road diesel engines, who retrofit with emission controls, would qualify for a credit against Montana income or business taxes (whichever is relevant) to a percentage such as 25% of the retrofit costs.
- Funding for feebates and/or tax credits for new off-road engines and vehicles would be proposed through legislative action. These owners would qualify for a credit against Montana income or business taxes (whichever is relevant) to a percentage (such as 10%) of the original costs (tax credit). Another option is to impose an additional fee as part of the engine maintenance costs, which would be based on the age of the engine.
- Funding may be available through the EPA Voluntary Diesel Retrofit Program, which will be dependent on the President’s FY07 budget.
- Potentially, manufacturers may offer incentives to purchase new off-road engine and vehicles when the new emission standards become in effect (refer to the last section).

Codes and Standards: The state will rigorously review and research the CO₂ emissions standards for the various off-road equipment categories as established by another regulatory agency before adoption. The Manufacturers of Emission Controls Association will also be contacted for additional information.

Pilots and Demonstrations: Coordinate with product developers to help them promote their technologies for retrofit technologies.

Reporting: A tracking system will be difficult to develop since this is a voluntary program; however, if tax credit programs are initiated, emissions reductions can be estimated from both the installation of off-road retrofit technologies, and the acquisition of new off-road engines and vehicles.

Enforcement: No enforcement actions are necessary since this is a voluntary program.

Related Policies/Programs in place

The EPA promulgated the Clean Air Non-road Diesel Rule in 2004. The new emission standards apply to diesel engines used in most construction, agricultural, industrial, and airport equipment. The particulate and nitrogen oxides standards will take effect for new engines beginning in 2008, with interim standards in 2010, and fully phased in for most engines by 2014. This comprehensive rule will reduce emissions from off-road diesel engines by integrating engine and fuel controls as a system to gain the greatest emission

reductions. Engine manufacturers will produce engines with advanced emission-control technologies similar to those upcoming for highway trucks and buses.

In addition, the EPA limited the fuel sulfur levels in non-road diesel fuel to prevent damage to the emissions control systems starting in 2007. The fuel sulfur levels will be limited to a maximum of 500 parts per million (ppm), the same as for current highway diesel fuel. Starting in 2010, fuel sulfur levels in most non-road diesel fuel will be reduced to 15 ppm.

Types(s) of GHG Reductions

Under Development.

Estimated GHG Savings and Cost Per Ton

	<u>2010</u>	<u>2020</u>	<u>Units</u>
GHG Emission Savings	Not Quantified	Not Quantified	MMtCO ₂ e
Net Present Value (2006-2020)			\$ Million
Cumulative Emissions Reductions (2006-2020)			MMtCO ₂ e
Cost-Effectiveness			\$/MtCO ₂ e

Key Uncertainties

None Cited.

Additional Benefits and Costs

None Cited.

Feasibility Issues

None Cited.

Status of Group Approval

Pending.

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-13 Intercity Travel: Aviation

Policy Description

The State of Montana would seek to encourage to the federal government to take actions to reduce GHG emissions from the aviation portion of the transportation sector. Since the state and local governments do not have authority over in-air operations of aviation vehicles, the state would work with other states to encourage the United States federal government to take significant actions in this arena.

Working in cooperation with other state governments, the State of Montana would seek to develop and encourage a set of federal policies that would significantly reduce greenhouse gas (GHG) emissions reductions from the in-air operation of airplanes.

Policy Design

Goal levels: Seek development of federal government policies to reduce GHG emissions from aviation.

Timing: Activities to begin immediately.

Parties Involved: Appropriate state government agencies.

Implementation Mechanisms

None Cited.

Related Policies/Programs in place

Under Development.

Types(s) of GHG Reductions

Under Development.

Estimated GHG Savings and Cost Per Ton

Not estimated. GHG emissions reductions would be calculated for the nation as a whole, and would be credited consistent with UNFCCC guidelines on a national basis.

Key Uncertainties

None Cited.

Additional Benefits and Costs

None Cited.

Feasibility Issues

None Cited.

Status of Group Approval

Pending.

Level of Group Support

TBD

Barriers to Consensus

TBD