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

	Mitigation Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Status of Option
		2010	2020	Total 2007-2020			
TLU-1	Light Duty Vehicle Clean Car Program	*0.0*	*0.9*	*5.2*	*TBD*	*-$100*	Pending
TLU-2	Fuel Efficient Replacement Tires	*0.0*	*0.027*	*0.096*	*TBD*	*-$90*	Pending
TLU-3	Vehicle MPG Consumer Information	*Included in TLU-1 and TLU-2*					Pending
TLU-4	Financial and Market Incentives for Low GHG Vehicle Ownership and Use	*Not Quantified*					Pending
TLU-5	Growth and Development Bundle	*0.0*	*0.047*	*0.260*	*< 0*	*< 0*	Pending
TLU-6	Low Carbon Fuels	*In Progress*					Pending
TLU-7	Heavy Duty Vehicle Emissions Standards and Retrofit Incentives	*0.0*	*0.020*	*0.162*	*$12.8*	*TBD*	Pending
TLU-8	Heavy-Duty Vehicle and Locomotive Idle Reduction	*0.005*	*0.015*	*0.127*	*TBD*	*TBD*	Pending
TLU-9	Procurement of Efficient Fleet Vehicles	*Included in other policy options*					Pending

	Mitigation Option	GHG Reductions ($MMtCO_2e$)			Net Present Value 2007–2020 (Million $)	Cost-Effectiveness ($/tCO_2e$)	Status of Option
		2010	2020	Total 2007-2020			
TLU-10	Transportation System Management	*In Progress*					Pending
TLU-11	Intermodal Freight Transportation	*0.023*	*0.091*	*0.589*	*TBD*	*TBD*	Pending
TLU-12	Off-Road Engines and Vehicles GHG Emissions Reductions	*Not Quantified*					Pending
TLU-13	Reduced GHG Emissions from Aviation	*Not Quantified*					Pending
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS	*0.028*	*1.100*	*6.434*	*TBD*	*TBD*	Pending
	SECTOR TOTAL PLUS RECENT POLICY ACTIONS	*TBD*	*TBD*	*TBD*	*TBD*	*TBD*	Pending

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 need a bidding process or public involvement before or during legislative or regulatory process for transparency.

Timing: Regulatory program could begin with vehicle model year 2011. To meet federal compliance, a rule writing process would take place by the appropriate agencies so that Montana can implement the California standards.

Parties Involved:

Applies to MY 2011 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. Timing will 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:

None.

Estimated GHG Savings and Cost Per Ton:

	2010	2020	Units
GHG Emission Savings	0.0	0.9	$MMtCO_2e$
Net Present Value (2006-2020)			$ Million
Cumulative Emissions Reductions (2006-2020)		5.2	$MMtCO_2e$
Cost-Effectiveness	-$100.00	-$100.00	$/MtCO_2e$

Data Sources:

- CCS, Draft Montana Greenhouse Gas Inventory and Reference Case Projections
- Diane Brown and Elizabeth Ridlington, Cars and Global Warming: Policy Options to Reduce Arizona's Global Warming Pollution from Cars and Light Trucks, AZ Public Interest Research Group (PIRG) Education Fund: February 2006, http://www.arizonapirg.org/AZ.asp?id2=22371.
- Elizabeth Ridlington, Tony Dutzik, and Christopher Phelps, Cars and Global Warming: Policy Options to Reduce Connecticut's Global Warming Pollution from Cars and Light Trucks, Spring 2005.

Quantification Methods:

- CCS compared results from New England states, California, and a National PIRG model 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 those from California and New England.
- 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. CCS applied

this same refined percentage reduction in emissions to the reference 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 projected by CCS is that the most likely scenario for emissions reductions 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

None identified.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

To be determined. (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, including the availability of all season/all weather LRR 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 corporate 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 would 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 and develop a marketing program for fuel efficient replacement tires.

By 2011, the state or appropriate agency would: ensure that a proportion of 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, and 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. This would include all weather fuel efficient tires and would require legislative approval for rental rates for 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.

Other leadership actions include:

- 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.

Although the climate in California is significantly more moderate than Montana, "All Season/All Weather" LRR Tires may be made available. Michelin tire manufacturers are currently researching and developing "all-weather tires."

Estimated GHG Savings and Cost Per Ton:

Assuming 5% Market Penetration with an increase to 10% at Year 2020:

	2010	2020	Units
GHG Emission Savings	n/a	0.027	$MMtCO_2e$
Net Present Value (2006-2020)			$ Million
Cumulative Reductions (2006-2020)	n/a	0.096	$MMtCO_2e$
Cost-Effectiveness	-$90	-$90	$/MtCO_2e$

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 and 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

Reductions in criteria air pollutants.

Feasibility Issues

None identified.

Status of Group Approval

Pending

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 and cost 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). Generally, a set of four LED Tire Alert Self-Calibrating Tire Pressure Valve Caps cost about $22.00 and Real Time Scan Gauges are about $100.00. 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:

Goals: 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:

None.

Estimated GHG Savings and Cost Per Ton:

	2010	2020	Units
GHG Emission Savings	Included in TLU-1 and TLU-2	Included in TLU-1 and TLU-2	$MMtCO_2e$
Net Present Value (2006-2020)			$ Million
Cumulative Emissions Reductions (2006-2020)			$MMtCO_2e$
Cost-Effectiveness			$/MtCO_2e$

Key Uncertainties

None identified.

Additional Benefits and Costs

None identified.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

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

Policy Description:

The four components studied and developed under this option would create financial incentives for the purchase and operation of vehicles that emit lower levels of GHG.

Policy Design:

The CCAC recommends that Montana further study and develop policy options that create incentives and disincentives for the purchase and operation of vehicles with varying fuel economy. The range of policies to be studied and developed include:

1. *Feebates.* A multi-state "feebate" program, including the neighboring western states of Arizona, California, and New Mexico. Feebate proposals usually have two parts: a) a fee on relatively high emissions/lower fuel economy vehicles; and b) a rebate or tax credit on low emissions/higher fuel economy vehicles. Legislation for this policy option will be needed.
2. *Excise Taxes.* A change in new vehicle excise taxes that increases taxes for relatively high-emitting vehicles and reduces taxes for relatively low-emitting vehicles. Overall, excise tax revenue would remain the same.
3. *Labeling.* A consumer labeling program that provides buyers with better information on the GHG emissions of new vehicles.

Together, these incentives could change the vehicle fleet technology mix through a combination of demand- and supply-side changes.

Goal levels: Prepare a detailed study of options and impacts.

Timing: Complete in 2010.

Parties: Industry, MT DEQ, MDT, MT Department of Revenue

Implementation Mechanisms

There is an important need for a greater understanding of the potential effects of single state or multi-state feebate programs on the types of vehicles that manufacturers put into the marketplace. Existing analysis shows that 90% of the benefits of feebate programs are likely to arise from the manufacturing (supply side) response rather than the consumer (demand side) response. Because individual states such as Montana have a small share of the national new vehicle market and thus are unlikely to have a significant influence on

the supply side by themselves, states in the southwest have been exploring coordinated multi-state programs. A consistent set of feebate programs across multiple states may include a large enough share of the US market to have a more significant effect on supply side decisions made by automobile manufacturers.

With that in mind, incentives and disincentives that should be studies and developed include:

- *Feebates*. A "Multi-State LDV GHG Fee and Rebate Study and Pilot Program" would consider the expected impacts of individual state feebate programs as well as coordinated or consistent multi-state programs. Ideally, such a multi-state study would include a number of western states in order to assess boundary issues and coordination issues. Initial analysis suggests that the Montana new car market may be too small to have an effect on the types of vehicles that manufacturers put into the marketplace. A consistent set of feebate programs across multiple states may include a large enough share of the U.S. market to have a more significant effect on automobile manufacturers' supply side decisions. The study would also identify and assess the actual benefits and costs of a pilot feebate program implemented at the county or metropolitan level in the western United States.

- Economic analyses of these proposals have found that feebate programs would work on two levels. First, the feebates would directly affect consumer choices for vehicle purchases due to financial incentives. Second, the feebates could indirectly affect the types of vehicles that automobile manufacturers choose to put into the marketplace.

- *Excise Taxes*. Examine options similar to Bill 2438 in the 2005 Massachusetts legislature[1] Which directs the Secretary of Taxation and Revenue to set a variable excise tax on new passenger vehicles ranging from 0 to 10 percent, based on the vehicle's CO_2 emission rate. The tax would be lowest on the lowest emitting vehicles and highest on the highest emitting vehicles, subject to certain guidelines and constrained by maintaining the current average excise tax of 3 percent (an annual adjustment of the schedule of taxes would maintain this average). One option would be to link the excise tax structure so that it is set at zero for vehicles that comply with the European Union GHG standards.[2] New Mexico currently has a zero excise tax for hybrid cars.

- *Labeling.* Examine options similar to an EU program begun in 2001, and a recent proposal by a researcher at Resources for the Future.[3] It would require dealers to

[1] http://www.mass.gov/legis/bills/house/ht02/ht02438.htm
[2] For a discussion of EU standards, see *Pew Center, Comparison of Passenger Vehicle Fuel Economy & GHG Emission Standards Around the World, 12/04,* http://www.pewclimate.org/global-warming-in-depth/all_reports/fuel_economy/index.cfm, pp. 11-12.
[3] http://www.rff.org/rff/News/Features/Combating-Global-Warming-One-Car-at-a-Time.cfm.

place a GHG label on each new vehicle that includes the estimated amount of CO_2 (in pounds) produced annually and places the vehicle into one of five distinct groupings from "best" to "worst."

Types(s) of GHG Benefit(s):

All GHG exhaust emissions through reduced fuel consumption.

Related Policies/Programs in place:

While feebate proposals have been described in academic studies, there has been no implementation of a full feebate program in the United States. While there are individual 'gas guzzler tax' and tax incentives for hybrid vehicle purchases, there is not yet any history of an on-the-ground example of a comprehensively implemented feebate program.

States such as Arizona, California, and New Mexico however are joining together to form a multi-state “feebate” program.

Estimated GHG Savings and Costs Per Ton:

Not estimated. Following the study called for here, the state could develop quantifiable options.

Data Sources, Methods, and Assumptions:

CCS conducted a review of the most relevant research and analysis on feebate proposals. CCS made three findings:

- There has been significant conceptual development of the feebate idea, especially at the national level;
- There is a need for a greater understanding of potential benefits and costs of state level and multi-state coordinated feebate programs; and
- There has not been sufficient pilot testing of feebate programs in the United States to provide implementation experience.

CCS assessed recent studies of potential GHG emission reductions from a national feebate program based on modeling work conducted by the U.S. Department of Energy's Oak Ridge National Laboratory (ORNL). CCS also reviewed other relevant recent studies and analyses of feebates conducted by the Canadian government, the State of California, and PIRG. The ORNL and other studies assume a national feebate rate high enough to produce responses from both consumers and manufacturers. ORNL’s estimate of the national potential for reduction in carbon dioxide emissions is approximately 11 $MMtCO_2e$ in 2010 and 66 $MMtCO_2e$ in 2020.

Some attempts have recently been made to estimate the GHG emissions reduction potential from individual state feebate programs, including programs proposed for the states of Arizona and California. For example, a recent PIRG analysis suggests that a

single state feebate program for Arizona would result in an estimated 0.1 $MMtCO_2e$ GHG emissions reductions in 2020. These recent estimates of the potential impacts of individual state programs are contingent upon assumptions and analytical methods that have not undergone thorough peer review. Therefore, the results of these analyses are preliminary and should be interpreted with some caution. Further analysis and study of the potential benefits and costs of individual state and multi-state feebate programs would greatly increase confidence in projected results.

Key Uncertainties:

Both the United States Department of Energy and the Canadian Transport Ministry have studied the potential impacts of national level feebate programs in recent years. While these studies have informed the debate about the advantages and disadvantages of national feebate programs, there remains considerable uncertainty about the potential benefits and costs of state or multi-state level feebate programs. There is an important need for a greater understanding of the potential effects of single state or multi-state feebate programs on the types of vehicles that manufacturers put into the marketplace.

Additional Benefits and Costs:

None identified.

Feasibility Issues:

Requires multi-state cooperation.

Status of Group Approval:

Pending

Level of Group Support:

TBD

Barriers to Consensus:

TBD

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 emissions 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

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 with a target of achieving 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 Involved:

- 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

- Montana's Department of Transportation (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.
- The state should encourage local governments to use arterial access management as a tool to manage growth while maximizing system performance and safety. This could involve mechanisms to better link local access management policies to land use plans.
- 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 coordinated with local land use plans.
- MDT will work with local governments to encourage smart growth principals in transportation and land-use planning and ensure multimodal transportation solutions consistent with community goals.
- MDT will develop a "smart growth" transportation planning tool kit for local government's use to support multimodal transportation networks.
- MDT will seek the maximum level of federal funding support for Montana's multimodal transportation networks.

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 state government work centers to locate in the central business district (CBD) or other established core business area of municipalities or, if this 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

- Encourage use of local option fuel taxes to help local governments fund transportation infrastructure that supports smart growth, including capital improvements, operation, and maintenance. The state could also enable local government to adopt local option sales taxes, which could be used for this purpose.
- Adopt alternative funding sources for schools.

- Encourage use 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.

Related Policies/Programs in Place

TBD

Estimated GHG Savings and Cost per Ton

	2010	2020	Units
GHG Emission Savings	0	0.047	$MMtCO_2e$
Net Present Value (2006-2020)	0	Net savings	$ Million
Cumulative Emissions Reductions (2006-2020)	0	0.260	$MMtCO_2e$
Cost-Effectiveness	-	Net savings	$/MtCO_2e$

Data Sources:

Baseline vehicle miles traveled (VMT) from *Montana Greenhouse Gas Inventory and Reference Case Projections, 1990-2020*.

A VMT reduction of 3% is a conservative estimate using the low range of values presented in the literature. For a summary of relevant literature, see:

- US EPA, *Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality*, 2001. http://www.epa.gov/dced/built.htm
- Cambridge Systematics, Inc., *Transportation Impacts of Smart Growth and Comprehensive Planning Initiatives: Final Report*, prepared for National Cooperative Highway Research Program, May 2004.

A variety of literature finds that integrated transportation and land use planning produces net savings on the total costs of buildings + land + infrastructure + transportation. However, some components may be higher even though total costs are reduced. The preponderance of literature suggests net savings overall (see US EPA, *Our Built and Natural Environments: A Technical Review of the Interactions Between Land Use, Transportation, and Environmental Quality*, 2001). A National Academy of Sciences / Transportation Research Board review found substantial regional and state-level infrastructure cost savings from more compact development (see Robert Burchell, et al., *The Costs of Sprawl—Revisited (TCRP Report 39)*, Transportation Research Board, Washington, D.C. 1998).

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

Achieving the target reduction in VMT depends on implementation of the policy initiatives at all levels of government. It is possible that required planning could be done in a way that does not change development patterns, and thus does not reduce VMT and emissions. That is, the policy language does not require these outcomes.

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.

Benefits include reduced infrastructure costs noted above, avoided health care costs from reduced air pollution and increased walking/biking, and other quality-of-life aspects.

There will be front-end costs of program development and implementation, and a successful program requires dedicated resources.

Feasibility Issues

Land use changes will not have a large impact on transportation systems or CO_2 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 CO_2 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. Low Carbon Fuels

Materials Under Development

TLU-7. Heavy Duty Vehicle Emissions Standards and Retrofit Incentives

Policy Description

The State of Montana would seek to work with other states and the U.S. Environmental Protection Agency (EPA) to advance greenhouse gases (GHG) emissions standards for on-road heavy-duty vehicles. In addition, the state would adopt incentive programs to reduce particulate matter (PM) emissions from existing on-road heavy-duty vehicles. Diesel particulate matter includes black carbon aerosols, which are thought to contribute to global warming through positive radiative forcing.

Approaches to diesel engine emission reductions include vehicle scrappage and replacement, re-powering (engine replacement), and retrofit with exhaust after-treatment devices. Two devices commonly used to reduce diesel particulate matter emissions are diesel oxidation catalysts and diesel particulate filters. These devices can be used on certain model year engines of heavy-duty trucks, motor coaches, and transit and school buses.

Policy Design

Goal levels:

- The state would encourage the retrofit of on-road heavy-duty diesel vehicles of model year 2006 or earlier. (Beginning with model year 2007, heavy-duty vehicles must meet stringent new EPA emissions standards and therefore have very low black carbon emissions.)
- The state would develop and implement a diesel retrofit incentive program with a goal of retrofitting 50% of the pre-2007 heavy-duty vehicles registered in the state that would still be in use in 2020. (The vast majority of heavy-duty vehicles in the 2020 fleet will meet the 2007 EPA standards and therefore not require retrofits.)
- The state would lead by example by initiating a retrofit program for the state-owned and state-leased vehicle fleet, with a goal of reaching a minimum of 80% of the pre-2007 vehicles fleet, subject to available funding.

Timing:

- The state could lead by example by seeking to initiate a diesel retrofit program for the state-owned and leased vehicle fleet by 2009 if funding is available.

- By 2009, a voluntary diesel retrofit program will be established by a state agency, focused on private heavy-duty vehicles registered in the state. Information packages would be developed about the health effects of air pollutants on human health, particularly on children. The program would create incentive options and marketing strategies, track retrofit and research activities, and spearhead the progression of on-road heavy-duty GHG emissions standards with other states and the EPA.
- Heavy-duty vehicle retrofit incentives will be available for vehicle owners by 2011.

Parties Involved: MT Dept. of Transportation, MT Dept. of Environmental Quality, local governments, MT Metropolitan Planning Organizations, relevant industries (utilities, parcel delivery services, etc.), public and private educational institutions/organizations, Public Health Department, Montana University System

Implementation Mechanisms

The appropriate state agency would establish a voluntary program to retrofit diesel engines in a rebate program. Users of heavy-duty diesel engines, who retrofit with emission controls, would also qualify for a credit against Montana income or business taxes (whichever is relevant) to a percentage (such as 25%) of the retrofit costs. Some retrofits reduce emissions of black carbon, which contribute to the greenhouse effect.

The state would encourage communities to establish local ordinances requiring retrofitting of heavy-duty vehicles, including garbage and construction trucks. In addition, transit companies contracted by the public school system to transport students, regardless of the purpose (daily transport, sporting events, educational trips, etc.) would also be required to participate in the retrofit programs.

The state would encourage the EPA to initiate the development of new GHG emission standards for heavy-duty vehicles.

The state and some counties have the regulatory authority to require air pollution control measures in areas designated by the 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.

Promotion and Marketing:

- 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.
- The state will develop information packages about the effects of air pollutants in diesel emissions on human health, particularly on children.

- Implement a voluntary diesel retrofit program by an appropriate state agency.
- Encourage transit companies contracted with a public school district to act accordingly with and support state actions. Educational information will be provided by a state agency about health effects of air pollutants from diesel emissions on children‘s health to both the transit companies and the public education system.
- Assist in the development of on-road heavy-duty vehicles GHG standards with other states and the EPA.
- Encourage the Montana university system to conduct research on on-road heavy-duty vehicles GHG standards and emission reduction technologies.
- As inTLU-2, above, and other options discussed below all state-supported programs would have dedicated detailed web sites. In addition to information and materials, efforts the various governmental agencies and businesses would be documented and publicized.

Technical Assistance:

- Contact the manufacturers of the various diesel emission reductions technologies to coordinate objectives and obtain technical support for outreach materials.
- The EPA created the Retrofit Technology Verification Process. This program evaluates the emission reduction performance of retrofit technologies, including their durability, and identifies engine operating criteria and conditions that must exist for these technologies to achieve those reductions.
- The EPA has also developed the Voluntary Diesel Retrofit Program to address pollution from diesel construction equipment and heavy-duty vehicles that are currently on the road. Program information is available to help fleet operators, air quality planners in state/local government, and retrofit manufacturers to create effective retrofit projects.

Funding Mechanisms and or Incentives:

- Funding for retrofit incentives would be proposed through legislative action. The owners of the retrofitted heavy-duty diesel engines would qualify for a credit against Montana income or business taxes (whichever is relevant) to a percentage of the retrofit costs (tax credit). Another option is “feebates” incurred 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 and/or the EPA funding programs to reduce air toxics at the local level. Also refer to “Related Policies/Programs in Place” for more possible funding avenues.

- The Montana university system can obtain applicable grant funding independently.

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 National Clean Diesel Campaign.

Codes and Standards: Refer to the information provided in the previous sections.

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

Reporting: The state will develop a tracking system so that the emissions reductions from the application of heavy-duty diesel replacement technologies can be derived. The state can annually contact the primary shipper companies in the main Montana cities to gather estimates from their inventories.

Enforcement: No enforcement actions are necessary since this is a voluntary program. However, the EPA will penalize any manufacturer who does not comply with their standards.

Related Policies/Programs in Place

A heavy-duty diesel engine retrofit may be eligible for funds through the Federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program, provided that the vehicle operate predominantly within or in close proximity to an EPA designated air quality nonattainment or maintenance area, and primarily benefit those areas. If the truck is privately owned, CMAQ funding would be contingent upon meeting the public-private partnership provisions of the guidance. Funds under the program also may be used for school bus programs in nonattainment and maintenance areas to retrofit or replace engines with the latest technologies that reduce emissions. Several urban areas in Montana are likely to be designated nonattainment under the new fine particulate standard.

On December 21, 2000, the EPA signed emission standards for model year 2007 and later heavy-duty highway engines. The rule included two components: (1) emission standards, and (2) diesel fuel regulation. The rule focused on PM and NOx. The stringent standard for PM took in effect in the 2007 heavy-duty engine model year. The NOx standard for diesel engines will be phased in between 2007 and 2010. As a result, model year 2007 and new heavy-duty vehicles have very low particulate matter emissions.

A new energy law enacted in August 2005 created a national program to clean up older diesel engines. The legislation, known as the Diesel Emissions Reduction Act or DERA, provides federal funding to help finance voluntary retrofit incentive programs (both grants and loans) at both the national and state level.

The EPA has also developed the Voluntary Diesel Retrofit Program with a designated web site. The program addresses pollution from diesel construction equipment and

heavy-duty vehicles that are 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 will depend upon the President's FY07 budget.

In addition, the EPA also has created the National Clean Diesel Campaign (NCDC). The NCDC will work aggressively to reduce the pollution emitted from diesel engines across the country through the implementation of varied control strategies and the aggressive involvement of national, state, and local partners.

Estimated GHG Savings and Cost or Cost Savings

	2010	2020	Units
GHG Emission Savings	0	0.020	$MMtCO_2e$
Net Present Value (2006-2020)	0	$12.8	$ Million
Cumulative Emissions Reductions (2006-2020)	0	0.162	$MMtCO_2e$
Cost-Effectiveness			$/MtCO_2e$

Data Sources:

- Truck population data (by model year), mileage accrual data, and PM2.5 emission factors from MOBILE6 model.
- Cost of retrofit devices (including installation) from: California Air Resources Board, *Evaluation of Port Trucks and Possible Mitigation Strategies*, Preliminary Draft, April 2006.

Quantification Methods:

- Assume heavy duty vehicles (HDVs) of model year pre-1994 are retrofitted with diesel oxidation catalysts (DOCs) and HDVs of model year 1994-2006 are retrofitted with diesel particulate filters (DPFs).
- DOCs reduce PM emissions by 25%; DPFs reduce PM emissions by 85% (California Air Resources Board technology verification levels)
- Obtain population of pre-2007 HDVs in operation in 2020 from MOBILE6 (by model year and by two weight classes: 14,000 – 33,000 lbs GVW and 33,001 – 80,000 lbs GVW)
- Assume retrofit program begins in 2011 and is completed in 2015.

- Assume program retrofits 50% of the pre-2007 HDVs that would be operating in 2020.
- Calculate PM2.5 emission reductions achieved in each year 2011 – 2020.
- PM2.5 emissions from HDVs are 75.6% elemental carbon (black carbon), according to MOBILE6. Calculate black carbon emission reduction.
- Assume 1 ton reduction in PM2.5 emissions is equivalent to 2,053 ton reduction in CO_2 equivalent emissions. This is the midpoint of method suggested in Jacobson, Mark Z., "Correction to 'Control of fossil-fuel particulate black carbon and organic matter, possibly the most effective method of slowing global warming'" *Journal of Geophysical Research*, Vol. 110, D14105, 2005.
- Assume cost for DOC (purchase plus installation) is $1,200 for GVW 14,000 – 33,000 lbs and $2,000 for GVW 33,000+.
- Assume cost for DPF (purchase plus installation) is $7,000 for GVW 14,000 – 33,000 and $8,500 for GVW 33,000+.
- Calculate total retrofit costs by year (all retrofits occur 2011 – 2015).
- Use a 4% discount rate to calculate net present value (NPV).

Key Assumptions: See above.

Key Uncertainties

There is a great deal of uncertainty in the global warming impact of aerosol black carbon emissions (such as diesel particulate matter). The IPCC has not assigned a global warming potential to black carbon emissions.

Additional Benefits and Costs

This strategy will reduce diesel particulate matter emissions. Many scientific studies have linked breathing PM to a series of significant health problems, including aggravated asthma, difficult breathing, chronic bronchitis, heart attacks, and premature death. Diesel particulate matter is of specific concern because it is likely to be carcinogenic to humans when inhaled.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-8. Heavy Duty Vehicle and Locomotive Idle Reduction

Policy Description

This policy option involves reducing the amount of time that trucks, buses, and locomotives idle. It would involve promoting and expanding the use of technologies that reduce long-term idling, including the use of truck stop electrification. It would also encourage development of local ordinances banning unnecessary idling by heavy-duty vehicles and locomotives 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. Technologies to reduce locomotive idling include automatic engine shut down/start up system controls and hybrid-electric switcher engines.

The state would encourage local ordinances banning unnecessary idling by heavy-duty vehicles and locomotives in certain situations. The state would encourage consistency among these ordinances. 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.

- Reduce locomotive idling in switch yards by 50%.

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.
- Attempt to have local ordinances in place by 2011 with relevant documentation available for distribution.
- The two-stage phase-in 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, railroad companies such as Burlington Northern Santa Fe (BNSF) and MontanaRail Link (MRL).

Implementation Mechanisms

The appropriate state agency would provide the general public, trucking industry, bus companies, and railroads with information (with a phone number to answer questions) indicating when and where (possibly 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.

Encourage trucking companies and railroads 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 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 or bus.

As with other policies, effort will be supported by the appropriate state agency with a dedicated detailed web site. Beyond information and materials, the success of those participating in successful idling reduction efforts would also be documented and publicized.

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.

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. The state would attempt to establish an MOU with BNSF and MRL regarding switch yard idle reduction. 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 concise language in local 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 local anti-idling ordinances, the EPA's recent Model State Idling Law should be reviewed for potential ordinance language.

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.

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).
- MDEQ has a voluntary program, *Clean Air Zone Montana,* 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 laws restricting the time 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

	2010	2020	Units
GHG Emission Savings	0.005	0.015	$MMtCO_2e$
Net Present Value (2006-2020)	TBD	TBD	$ Million
Cumulative Emissions Reductions (2006-2020)	0.005	0.127	$MMtCO_2e$
Cost-Effectiveness	TBD	TBD	$/MtCO_2e$

Data Sources:

- Identification and characteristics of truck stops in Montana obtained from www.gocomchek.com
- Information on current truck stop electrification projects in Montana (none) obtained from EPA SmartWay Interactive Activity Map (www.epa.gov/smartway)
- Estimate of truck idling hours per night obtained from: Lutsey, Nicholas, Christie-Joy Broderick, Daniel Sperling, Carollyn Oglesby, "Heavy-Duty Truck Idling Characteristics - Results from a Nationwide Truck Survey," paper submitted for the 2004 Annual Meeting of the Transportation Research Board, 2004.
- Information on fuel use per engine idle hour obtained from *Fleet Managers Guide to Fuel Economy*, The Maintenance Council, American Trucking Association, 1998.
- Population of school buses from Montana Office of Public Instruction
- Railyard fuel use from Montana DEQ.

Quantification Methods:

Trucks

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_2O ($MMTCO_2$ Eq.)	0.000005	0.000011
CH_4 ($MMTCO_2$ Eq.)	0.000000	0.000001
Total Reduction ($MMTCO_2$ Eq.)	0.005	0.012

School Buses

Number of school buses, 2005	2,606
School days per year	180
Trips per bus per day	4
School bus trips per year	1,876,320
Idling time per trip, current (min)	15
Idling time per trip, w/ regulation (min)	5
Reduction in idling time per trip (min)	10
Reduction in idling time per year (hrs)	312,720
CO_2 emission factor (g/hr)	3,300
Reduction in CO_2 emissions/yr (metric tons)	1,032
Reduction in CO_2 emissions/yr (MMt CO_2)	0.0010

Locomotives

Fuel use per major yard, currently (gal)	80,000
Major switch yards in MT	6

Total MT yard fuel use, currently (gal)	480,000
Portion of idling that can be eliminated	50%
Reduction in fuel use/yr (gal)	240,000
MMBTU (million)	0.0333
MMT C	0.0006
$MMTCO_2$	0.0023

Key Assumptions:

- Benefits of truck idle reduction increase linearly between 2010 and 2020.
- Benefits of school bus and locomotive idle reduction constant from 2011 to 2020.
- School buses currently idle 15 minutes per trip on average; implementation of this policy would reduce idling per trip to 5 minutes.
- Railyard fuel use can be reduced by 50%.

Key Uncertainties

- Number of overnight truck parking spaces in Montana.
- Utilization of overnight truck parking spaces
- Extent of school bus idling, and effectiveness of policy at reducing bus idling
- Willingness of railroads to cooperate with locomotive idle reduction efforts

Additional Benefits and Costs

Reducing idling by heavy duty vehicles and locomotives would reduce particulate matter emissions. Many scientific studies have linked breathing PM to a series of significant health problems, including aggravated asthma, difficult breathing, chronic bronchitis, heart attacks, and premature death. Diesel particulate matter is of specific concern because it is likely to be carcinogenic to humans when inhaled.

Feasibility Issues

None identified.

Status of Group Approval

Pending

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 also encouraging private and public agency fleets with the potential to develop incentive programs for local governments to help with the initial costs of purchasing such vehicles.

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.

Goals: 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.

Timing: Immediately, the state or appropriate agency will:

- Identify barriers to purchasing 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 low carbon fuels are purchased for the state motor pool fleet wherever they are available and if applicable for the vehicle type.

By 2020: The state will set a goal where 50% of all vehicles are "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 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 to15 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:

GHG reductions and costs for this enabling option are incorporated into those reported under TLU-1, TLU-11 and TLU-6 - 8.

Key Uncertainties

None identified.

Additional Benefits and Costs

None identified.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-10. Transportation System Management

Policy Description

The State of Montana would seek to reduce GHG emissions from the transportation sector through improvements to transportation system management. These efforts would focus on the improvement, management, and operation of the transportation infrastructure, with a focus on the roads and highway systems.

Policy Design:

Goals: Promote the development of efficiencies in Montana's transportation system to achieve fuel savings and improved safety.

Timing: Ongoing and continuous

Parties Involved: MDT, urbanized areas, county road supervisors, Montana transit providers

Implementation Mechanisms

- MDT will complete a minimum of 16 roundabouts by 2015
- MDT will continue to evaluate all intersections for roundabout installation where traditional signals are warranted and justified
- MDT will complete signal synchronization on all state managed routes in urban areas (i.e. >5,000 population) by 2009
- MDT will complete conversion of all traffic lights to LED bulbs by 2010 and will work with cities to convert lights under city jurisdiction
- All urban transportation plans will be updated by 2012 with an emphasis on operations and safety. In metropolitan areas, the plans will meet conformity requirements for criteria pollutants
- Congestion management plans for all high volume construction projects will be routinely implemented by 2009.
- Access management will continue to be pursued consistent with state of Montana statutes and Transportation Commission policies. Currently, MDT is implementing access management on US 93 (north and south) and US 212 from Red Lodge to Laurel. MDT is developing access management plans in a number of the rapidly developing urban/suburban areas (Bozeman, Billings). In addition, MDT is also developing plans for by-pass projects in Billings, Kalispell and Great

Falls, that will all be access controlled. The appropriate goal is to continue and strengthen access management within the state.

Related Policies/Programs in place: None identified.

Estimated GHG Savings and Cost or Cost Savings:

Note; Quantifications are currently in progress by MDT

	2010	2020	Units
GHG Emission Savings	TBD	TBD	$MMtCO_2e$
Net Present Value (2006-2020)	TBD	TBD	$ Million
Cumulative Emissions Reductions (2006-2020)	TBD	TBD	$MMtCO_2e$
Cost-Effectiveness	TBD	TBD	$\$/MtCO_2e$

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-11. Intermodal Freight Transportation

Policy Description

Transportation of freight by railroad generally results in less fuel use and GHG emissions than transportation by truck. The best candidates for diversion from truck to rail are commodities that can move by intermodal rail transportation, which involves shipping containers or truck trailers placed on rail flatcars. This option would encourage the expansion of intermodal rail service for MT shippers. In addition, the state would strive to increase the competitiveness of rail rates for all Montana shippers.

With the closure of the intermodal facility in Shelby, intermodal transfers are not currently possible on the BNSF mainline in Montana. MDT has initiated a study to perform logistics and marketing research in support of container on flatcar shuttle train service on the BNSF mainline to the Port of Seattle or Tacoma. It is expected that the results of this study will suggest actions for the state to support re-establishment of intermodal rail service for Montana shippers seeking rail access to markets outside the state.

Policy Design

Goals:

- MDT and appropriate partners will complete the Stage I Intermodal Shuttle Train Research Study in 2008.
- Montana will implement the strategies coming from this research project starting in 2009.
- State of Montana will pursue competitive rates and access to service for Montana rail shippers.
- Target outcome of these efforts is 1 intermodal unit train to Port of Seattle or Tacoma by 2010 and 4 intermodal unit trains by 2020.

Timing: See goals above.

Parties Involved: MDT, railroads.

Implementation Mechanisms

Implementation mechanisms will be determined in part by the Intermodal Shuttle Train Research Study. They might include the following:

- State support for improvements to intermodal transfer facilities in the state.

- State identification of potential intermodal shippers.
- State discussions with railroads operating in the state.

Related Policies/Programs in Place

Montana has a Rail Competition Council that seeks to ensure competitive railroad rates for the state's shippers.

MDT is initiating an Intermodal Shuttle Train Research Study, as noted above.

Types(s) of GHG Reductions

By reducing heavy-duty truck travel, this option would primarily reduce CO_2 emissions.

Estimated GHG Savings and Costs per $MtCO_2e$

	2010	2020	Units
GHG Emission Savings	0.023	0.091	$MMtCO_2e$
Net Present Value (2006-2020)	TBD	TBD	$ Million
Cumulative Emissions Reductions (2006-2020)	0.023	0.589	$MMtCO_2e$
Cost-Effectiveness	TBD	TBD	$/MtCO_2e$

Data Sources

- Railroad distance from Shelby to Tacoma, WA from BNSF web site.
- Railroad fuel efficiency from the Association of American Railroad's Railroad Facts and *Rail vs. Truck Fuel Efficiency: The Relative Fuel Efficiency of Truck Competitive Rail Freight and Truck Operations Compared in a Range of Corridors, Prepared for the Federal Railroad Administration*, Prepared by Abacus Technology Corporation, April 1991.

Quantification Methods

Assume one 100-car double-stack intermodal train begins service in 2010, running from Shelby to the Port of Tacoma, WA. Train runs 6 days per week. Assume 40-foot containers are drayed from Great Falls to Shelby. Train eliminates truck trips (pulling 53-foot trailers) between Great Falls and Tacoma, WA. Train frequency increases to two per week in 2013, three per week in 2016, and four per week in 2019. See calculations below.

Distances

Rail: Shelby to Tacoma, WA	757	Miles
Truck: Great Falls to Shelby	86	Miles
Truck: Great Falls to Tacoma, WA	654	Miles
Train length	100	Cars
TEUs/train (double-stack)	400	
Cargo weight/TEU	8	Tons
Cargo weight/train	3,200	Tons
Rail fuel efficiency (double-stack)	400	ton-miles/gal
Rail emission factor (double-stack)	24.6	g CO_2/ton-mile
Train emissions	59,555	kg CO_2
TEUs/dray truck	2	
Dray truck trips/day	200	
Dray truck fuel use/day	2,867	Gallons
Dray truck emissions/day	27,897	kg CO_2
TEUs/long-haul truck	2.65	
Long-haul truck trips/day	151	
Long-haul truck fuel use/day	16,453	Gallons

Long-haul truck emissions/day	160,113	kg CO_2

Total Annual Emissions

Rail + Dray	27,285	Mt CO_2
All Truck	49,955	Mt CO_2
Difference	22,670	Mt CO_2

Emission Reduction, 2010	0.023	MMt CO_2
Emission Reduction, 2020	0.091	MMt CO_2

Key Assumptions

- See above.

Key Uncertainties

The success of this strategy depends on sufficient shipper demand and willingness of the railroads to provide intermodal service. Because MDT has not yet completed the shuttle rail research study, there is significant uncertainty as to the level of shipper demand for such service and the likelihood that the railroads would re-establish intermodal service.

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

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, agriculture, 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 (CO_2) 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 40% of the state-owned and leased off-road engines and vehicles by 2010.
- State would set a goal of 30%-40% of lawn and garden equipment by 2015.
- The state will implement a voluntary diesel retrofit program by 2010.
- The state will develop information about the emissions reductions from retrofit technologies on the various off-road engines and vehicles by 2010.

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 CO_2 emissions standards for the various equipment categories based on engine horsepower.
- All state-supported programs should have good information and materials for promoting the program and a dedicated, detailed web sites. As discussed in other options, publicity about successful program partners will help spread public awareness.

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 CO_2 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

	2010	2020	Units
GHG Emission Savings	Not Quantified	Not Quantified	$MMtCO_2e$
Net Present Value (2006-2020)			$ Million
Cumulative Emissions Reductions (2006-2020)			$MMtCO_2e$
Cost-Effectiveness			$\$/MtCO_2e$

Key Uncertainties

None identified.

Additional Benefits and Costs

None identified.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-13. Reduced GHG Emissions from Aviation

Policy Description

The State of Montana would encourage to the federal government to take actions reducing GHG emissions from the aviation portion of the transportation sector. Such actions may include promotion and use of existing aircraft technologies and programs to reduce emissions such as Reduced Vertical Separation Minimums (RVSM), Required Navigation Performance (RNP), System for Assessing Aviation's Global Emissions (SAGE), Voluntary Airport Low Emissions (VALE) Program, etc.

Since the state and local governments do not have authority over in-air operations of airplanes, 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 UNFCC guidelines on a national basis.

Key Uncertainties

None identified.

Additional Benefits and Costs

None identified.

Feasibility Issues

None identified.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD