

TLU-1 Light Duty Vehicle Clean Car Standards

Policy Description:

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

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

Policy Design:

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

Implementation Mechanisms

Institute a regulatory program beginning with vehicle model year 2011.

Related Policies/Programs in place:

TBD

Estimated GHG Savings and Cost Per Ton:

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

- Data Sources:

CCS, Draft Montana Greenhouse Gas Inventory and Reference Case Projections

- Quantification Methods:

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

While PIRG projected a 13.7% reduction in light duty vehicle emissions with this policy for Arizona, a CCS refinement estimated a 15.5% reduction in emissions for Arizona. CCS applied this same refined percentage reduction in emissions to 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 of the emissions reduction projected by CCS is that the most likely scenario for emissions reductions is one that would fall between the more conservative scenario projected by the PIRG model and the more optimistic scenario projected by the California and the New England models.

Key Uncertainties

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

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-2 Fuel Efficient Replacement Tire Program

Policy Description:

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

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

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

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

Policy Design:

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

Timing:

By 2009, the State or appropriate agency will:

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

into legislatively approved rental rates.

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

By 2011, the State or appropriate agency will:

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

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

Implementation Mechanisms

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

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

Information and Education:

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

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

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

Promotion and Marketing:

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

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

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

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

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

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

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

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

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

Technical Assistance:

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

Funding Mechanisms and/or Incentives:

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

Voluntary and or Negotiated Agreements:

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

Codes and Standards:

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

Pilots and Demonstrations:

Coordinate with product developers to help them promote their technologies.

Reporting:

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

Enforcement:

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

Related Policies/Programs in place:

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

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

Estimated GHG Savings and Cost Per Ton:

Assuming 100% Market Penetration (Regulatory Approach)

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

Assuming 10% Market Penetration

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

Assuming 5% Market Penetration

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

- Data Sources:

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

- Quantification Methods:

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

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

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

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

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

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

- Key Assumptions:

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

Key Uncertainties

The low rolling resistance fuel efficient tires program is based upon existing off-the-shelf technologies and products that already exist in the consumer marketplace. These tires are

already available in the marketplace, and are comparable with the tires included as original equipment on newly purchase light duty vehicles.

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD

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

Policy Description:

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

Policy Design:

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

Implementation Mechanisms

Information and Education:

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

Promotion and Marketing:

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

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

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

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

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

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

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

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

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

Technical Assistance:

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

Funding Mechanisms and/or Incentives:

TBD

Voluntary and or Negotiated Agreements:

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

Codes and Standards:

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

Pilots and Demonstrations:

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

Reporting:

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

Enforcement:

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

Related Policies/Programs in place:

TBD

Estimated GHG Savings and Cost Per Ton:

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

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

TBD

Level of Group Support

TBD

Barriers to Consensus

TBD