



**North Carolina**  
**Climate Action Plan Advisory Group**

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**Table x.**  
**Transportation and Land Use Technical Work Group**  
**Summary List of Mitigation Options**

#	Mitigation Option Name	2010 GHG Savings (MMtCO <sub>2</sub> e)	2020 GHG Savings (MMtCO <sub>2</sub> e)	2007-2020 GHG Savings (MMtCO <sub>2</sub> e)	Cost-Effectiveness (\$/MtCO <sub>2</sub> e)
TLU-1	Smart Growth Bundle				
TLU-2	Improve Transit Bundle				
TLU-3	Feebates				
TLU-4	VMT Fee				
TLU-5	Truck Stop Electrification (TSE)				
TLU-6	Tailpipe GHG Standards				
TLU-7	Biofuels Bundle				
TLU-8	Procurement of Efficient Fleet Vehicles				
TLU-9	Anti-Idling				
TLU-10	Diesel Retrofits				
TLU-11	Fuel Tax				
TLU-12	Pay as You Drive Insurance				
TLU-13	Incentives for Advanced Technology Vehicles				

**TLU - 3 Feebates: to raise revenue**

**Mitigation Option Description**

Motor vehicle registration fees based on a vehicle emissions and fuel economy as rated by U.S EPA . Could be designed to be a ‘feebate’ by providing a small refund instead of surcharge for vehicles that achieve the lowest combined score.

**Mitigation Option Design**

**Goals:** To raise funds for State of North Carolina to provide funds for transportation related projects that reduce GHG.

This type of policy has the dual benefits of:

- *Providing a mechanism for the state to develop a fund to support GHG reduction efforts in NC that is directly tied to a significant source of GHG emissions ( our cars and trucks)*

**Timing:** Should be implemented as soon as possible.

**Coverage of parties:** All vehicles registered in North Carolina.

**Other:** [Insert text if/as appropriate]

**Implementation Mechanisms**

This could be ordered through legislation.

For light duty vehicles, the appropriate emissions/efficiency factor is identified from the table below (this will be done by a DMV computer). This factor is based on the vehicle’s Green Vehicle Guide rating, as published by EPA ([www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles) )

- . By incorporating the vehicle’s Green Vehicle Guide rating, both fuel economy and emissions are accounted for.

<b>Combined Score from EPA Green Vehicle Guide</b>	<b>Emissions/Efficiency Factor</b>
19-20	10,000
17-18	9,000
15-16	8,000
13-14	7,000
11-12	6,000
9-10	5,000
7-8	4,000
5-6	3,000
3-4	2,000
<3	1,000

Then to calculate the surcharge, vehicle miles traveled (VMT) is divided by the emissions/efficiency factor, as shown in the example below.

Vehicle	Vehicle Miles Traveled	Combined Score from EPA Green Vehicle Guide	Factor from Table Above	Fee (VMT/Factor)
Toyota Prius	15,000	20	10,000	\$1.50
Volkswagen Jetta Diesel, Manual	21,000	13	7,000	\$3.00
Chevy Cavalier	49,000	14	7,000	\$7.00
Toyota Land Cruiser	15,000	2	1,000	\$15.00

Generally the feebate design needs to: be simple, minimize the number of pivot points, be well-documented, be designed to maximize not minimize consumer attention.

**Related Policies/Programs in Place**

During the past 2 legislative sessions, variations of a motor vehicle surcharge have been introduced.:

**NC SB 1038/HB 1595- Mobile Source Emission Reduction Program**

Sponsors: Senators Clark Jenkins and Charlie Albertson. Referred to: Agriculture/Environment/Natural Resources

House Sponsors: Representatives Martha Alexander and Joe Tolson. Referred to: Finance

**\*Establishes variable motor vehicle registration fees based on vehicle’s pollution and fuel economy score to generate funds for public and private sector use of alternative fuel and advanced transportation technologies.** Funds would be distributed through the State Energy Office for transportation projects that support clean air renewable energy objectives

***\*Proposed committee substitute will set vehicle surcharge from \$2-\$14 annually***

**Benefits:**

- ✓ Funds raised in direct proportion to the effect on the environment - the “polluter pays principle”
- ✓ Source of revenue to support public and private projects that address transportation emissions
- ✓ Supports development of clean technology industries in NC and improves air quality

**Types(s) of GHG Reductions**

[Insert text as appropriate]

**Estimated GHG Savings and Costs per MTCO<sub>2</sub>e**

[Insert text as appropriate]

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

**Key Uncertainties**

**Additional Benefits and Costs**

**Feasibility Issues**

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU - 3 Feebates to change fleet mix

### Mitigation Option Description

'Feebates' consist of a sliding scale of fees and rebates for new cars based on their emissions of greenhouse gases, fuel consumption, or some other measure of a vehicle's environmental impacts. Feebates have been proposed in many forms over the last fifteen years but have not yet been implemented in the United States. There have been notable efforts in California and Maryland in the early 1990s. These programs provide an incentive for manufacturers to adopt cost-effective efficiency technologies, and for consumers to buy lower-emitting vehicles.

### Mitigation Option Design

**Goals:** To reduce overall GHG emissions from new automobiles purchased in the state.

- By creating incentives and disincentives to change consumer behavior. The 'Re-bate' creates an incentive for consumers to buy cleaner, more fuel efficient vehicles while the 'fee' on vehicles with lower fuel economy and higher emissions creates a disincentive for consumers to purchase them.
- By sending a signal to manufacturers to produce increasingly efficient vehicles for the market (*this is less prominent at the individual state level*).
- By creating a dedicated revenue stream for promotion of low- or no-GHG transportation alternatives. E.g. hybrid tax credits, transit infrastructure??

**Timing:** Should be implemented as soon as possible.

**Coverage of parties:** All new vehicles registered in North Carolina.

**Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

This could be ordered through legislation.

The feebate can be linked to several parameters;

1. The simplest may be to set the fee or the rebate in proportion to the amount of fuel consumed by the vehicle per mile driven.
2. The consumption could be considered relative to other vehicles within each class or across classes.
3. Then administrators specify the rate (in dollars per mile) and the "pivot point" between those who pay and those who are paid. The location of this pivot point will determine the net revenue flow between consumers and the government.
4. The feebate could be set as a multiplier for an excise tax so that the fee or rebate is determined not only by the emissions rate of the vehicle but by its price as well.

Generally the feebate design needs to: be simple, minimize the number of pivot points, be well-documented, be designed to maximize not minimize consumer attention.

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

[Insert text as appropriate]

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

[Insert text as appropriate]

#### **Estimated GHG Savings and Costs per MTCO<sub>2</sub>e**

[Insert text as appropriate]

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

#### **Key Uncertainties**

1. If a consumer is already in the market to buy a new vehicle, will a small additional fee create enough of a disincentive to change their behavior?
2. Should we make it revenue neutral or should it be geared toward raising money for a dedicated purpose such as transit promotion or other low GHG transportation mechanism?
3. Legality – must be designed within the limitations of Federal CAFE regulations.
4. Leakage – could lead to consumers avoiding the fee buy purchasing from a neighboring state. Design features should include a clause to protect NC automobile dealers – for example, tying the fee to registration in NC.

#### **Additional Benefits and Costs**

-raises consumer awareness of the link between energy costs, fuel efficiency and GHG emissions (makes that connection personal and financial to consumers)

-more politically feasible than a gas tax because there is the option to be revenue neutral

-costs are more certain and transparent in a market-based mechanism vs. regulatory measures to reduce fuel consumption

#### **Feasibility Issues**

#### **Status of Group Approval**

[Pending or Completed]

#### **Level of Group Support**

[Insert text as appropriate]

#### **Barriers to Consensus**

[Insert text as appropriate]



## TLU-6 Tailpipe GHG Standards

### Mitigation Option Description

Adopt the California GHG emission standards (also known as the “Pavley” standards) in order to reduce GHG emissions from passenger vehicles.

### Mitigation Option Design

- **Goals:** 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.
- **Timing:** The General Assembly could enact legislation in 2007 so that NC can implement the California standards—these standards would take effect in the 2010\* calendar year.
- **Coverage of parties:** 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. The timing may be affected by the date of enactment of legislation, likely litigation, and the regulatory process.

### Implementation Mechanisms

This is a command and control regulatory approach.

### Related Policies/Programs in Place

[Insert text as appropriate]

### Types(s) of GHG Reductions

[Insert text as appropriate]

### Estimated GHG Savings and Costs per MTCO<sub>2</sub>e

[Insert text as appropriate]

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

### Key Uncertainties

[Insert text as appropriate]

### Additional Benefits and Costs

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU-7 Biofuels Bundle [Option #1]

### Mitigation Option Description

Reduce/eliminate motor fuels tax on biodiesel and ethanol (E85). Develop mechanism for monthly credit for biodiesel and E85 blended fuel that would be equivalent to the state motor fuels tax owed on the biofuels portion of the fuel blend

### Mitigation Option Design

[Insert text as appropriate]

- **Goals: Stimulate availability/sales of biofuels to the motoring public by providing incentive to fuel marketers. Timing: Immediate**
- **Coverage of parties: This would stimulate use of biofuels in the private sector.**

( State and local government fuels sales are not subject to state motor fuels tax)

- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

- **Monthly tax credit would be claimed on same form ( Biodiesel and Fuel Alcohol Providers Form) as marketers currently file with NC DOR Motor Fuel Tax Division to pay fuel tax. This would reduce pump price of Biofuels as marketers would pass bulk of credit on to consumer in order to be competitive. Credit could be paid for out of General State Revenues , DOT highway funds. Credit would be revenue neutral as it would be equal to the tax that would have been paid by marketers for biofuel portion of blend.**

### Related Policies/Programs in Place

[Insert text as appropriate]

### Types(s) of GHG Reductions

[Insert text as appropriate]

### Estimated GHG Savings and Costs per MTCO<sub>2</sub>e

[Insert text as appropriate]

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

### Key Uncertainties

[Insert text as appropriate]

**Additional Benefits and Costs**

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU-7 Biofuels Bundle [Option #2]

### Mitigation Option Description

Develop mechanism for .25 cent per gallon credit ( incentive) for biodiesel and ethanol used in North Carolina vehicles

### Mitigation Option Design

[Insert text as appropriate]

- **Goals:** Stimulate availability/sales of biofuels to all transportation fuel users by providing incentive to fuel marketers.
- **Timing:** Immediate
- **Coverage of parties:** This would stimulate sales and use of biofuels by all transportation fuel users in North Carolina.
- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

- **Monthly tax credit would be claimed on same form ( Biodiesel and Fuel Alcohol Providers Form) as marketers currently file with NC DOR Motor Fuel Tax Division to pay fuel tax. This would reduce price of Biofuels as marketers would pass bulk of credit on to consumer in order to be competitive. Credit could be paid for out of General State Revenues, DOT highway funds. Credit would NOT be revenue neutral as the state would be providing incentive for fuel sold to non-taxable entities ( local and state government) as well as sales to taxable entities. However, only the biofuel portion of blended fuel would be eligible for .25 cent credit. For example a B20 blend would get a .05 cent credit.**

### Related Policies/Programs in Place

[Insert text as appropriate]

### Types(s) of GHG Reductions

[Insert text as appropriate]

### Estimated GHG Savings and Costs per MTCO<sub>2</sub>e

[Insert text as appropriate]

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

**Key Uncertainties**

[Insert text as appropriate]

**Additional Benefits and Costs**

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU-7 Biofuels Bundle [Option #3]

### Mitigation Option Description

Tax Credit for Biodiesel Producers

### Mitigation Option Design

- **Goals: Stimulate production and use of biodiesel by providing income tax credit incentive to fuel producers/marketers.**
- **Timing: effective date Jan 1, 2008**
- **Coverage of parties: This will stimulate production and use of biodiesel in NC**
- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

A provision was included in the 2006 NC budget. See budget text in following section. Not clear how this will be implemented but it appears to be an income tax credit that's related to the amount the taxpayer paid during the previous year in motor fuels taxes on the biodiesel.

### Related Policies/Programs in Place

**GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 2005**

**SESSION LAW 2006-66**

**SENATE BILL 1741 ( Budget Bill) signed by Gov Easley 7-10-06**

**<http://www.ncleg.net/Sessions/2005/Bills/Senate/PDF/S1741v8.pdf>**

### **TAX CREDIT FOR BIODIESEL PRODUCER**

**SECTION 24.8.(a)** Article 3B of Chapter 105 of the General Statutes is amended by adding a new section to read:

**"§ 105-129.16F. Credit for biodiesel producers.**

(a) Credit. – A biodiesel provider that produces at least 100,000 gallons of biodiesel during the taxable year is allowed a credit equal to the per gallon excise tax the producer paid under Article 36C of this Chapter on the biodiesel. For the purposes of this section, 'biodiesel' is liquid fuel derived in whole from agricultural products, animal fats, or wastes from agricultural products or animal fats. The credit does not apply to tax paid on diesel fuel included in a biodiesel blend. The credit may not exceed five hundred thousand dollars (\$500,000) and is subject to the limitations of G.S. 105-129.17.

(b) Sunset. – This section is repealed for taxable years beginning on or after

January 1, 2010."

**SECTION 24.8.(b)** This section is effective for taxable years beginning on or after January 1, 2008.

**Types(s) of GHG Reductions**

[Insert text as appropriate]

**Estimated GHG Savings and Costs per MTCO<sub>2e</sub>**

[Insert text as appropriate]

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

**Key Uncertainties**

[Insert text as appropriate]

**Additional Benefits and Costs**

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU-11 Fuel Tax / Fee

### Mitigation Option Description

A per-gallon fee or tax charged per gallon of liquid fuel sold at the pump.

Amount to be determined.

- Small amounts (~5-10 cents) would have some demand impact, but would be more appropriately seen as a way to fund transportation-related policies than to reduce consumption and emissions directly.
- Larger amounts would have a more meaningful direct impact on consumption and emissions. Revenue could still be used to fund transportation-related policies, but could also be used to reduce other taxes and fees.

### Mitigation Option Design

- **Goals:**
  - a) Reflect [some of] the health and environmental (sep. GHG) costs of carbon combustion in the fuel being sold.
  - b) Fund options other than SOV driving.
  - c) By reflecting the costs of combustion, reduce the growth in use.
- **Timing:** Phase in over [4] years.
- **Coverage of parties:** All fuel. Could be adjusted by carbon content.
- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

Use existing gas tax collection mechanisms. Revenue may flow to same or different end use than current gas tax.

### Related Policies/Programs in Place

[Insert text as appropriate]

### Types(s) of GHG Reductions

[Insert text as appropriate]

### Estimated GHG Savings and Costs per MTCO<sub>2</sub>e

[Insert text as appropriate]

- **Data Sources:**

- **Quantification Methods:**
- **Key Assumptions:**

**Key Uncertainties**

[Insert text as appropriate]

**Additional Benefits and Costs**

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]

## TLU-12 Pay-as-you-drive Insurance

### Mitigation Option Description

Pay-As-You-Drive pricing converts insurance to a variable cost with respect to vehicle travel, so premiums are directly related to annual mileage. This type of pricing makes vehicles insurance more actuarially accurate and gives motorists an opportunity to save money when they reduce their mileage. The vehicle's insurance premium is based directly on how much it is driven. The more you drive the more you pay and the less you drive the more you save.

### Mitigation Option Design

- **Goals:** To reduce GHG emissions from automobiles by influencing individual drivers to reduce their annual VMT.
- **Timing:** A pilot project could be implemented first on a smaller scale as soon as possible. The program could also be optional thus allowing drivers to choose this program and insurance companies choose whether to offer it or not.
- **Coverage of parties:** optional/mandatory for insurance companies, government incentives, available to all motorists insured in NC.
- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

- remove barriers: the legislature could explicitly make it possible for insurance companies to offer this type of insurance as an option.

-legislation to encourage insurers to offer PAYD pricing.

-public private projects can help pilot and promote the pricing option.

-insurance companies could charge motorists in lump sum e.g. 10,000-12,000 first and charge for additional payments as needed with the total premium calculated at the end of the term based on recorded mileage (motorists credited or charged for extra mileage).

-insurance companies could bill motorists based on their monthly vehicle mileage similar to other utilities.

### Related Policies/Programs in Place

-Oregon HB 3871 – provided tax credits to insurers that offer Pay-As-You-Drive pricing. Endorsed by the National Association of Independent Insurers.

-Value Pricing Program PAYD Pilot projects ([www.fhwa.dot.gov/policy/13-hmpg.htm](http://www.fhwa.dot.gov/policy/13-hmpg.htm)). This Federal Highway Administration's Value Pricing Pilot Program is now providing funding for PAYD insurance simulation projects in GA and MA.

-Progressive Insurance Autograph ([www.progressive.com](http://www.progressive.com)), a distance-based insurance program in Texas. The program uses GPS to track vehicle location and use.

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

[Insert text as appropriate]

### **Estimated GHG Savings and Costs per MTCO<sub>2</sub>e**

[Insert text as appropriate]

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

### **Key Uncertainties**

[Insert text as appropriate]

### **Additional Benefits and Costs**

-consumer savings, economic efficiency, increased fairness, progressive not regressive, increased affordability, reduced incentive to drive uninsured due to lower premium costs.

-reduced vehicle travel by as much as 10% => reduced traffic congestion, road and parking facility costs,

-fewer collisions – some estimates say 12-15% decline.

-lower GHG emissions.

### **Feasibility Issues**

-overcoming industry insurance opposition

-raising awareness/public education of the program

### **Status of Group Approval**

[Pending or Completed]

### **Level of Group Support**

[Insert text as appropriate]

### **Barriers to Consensus**

[Insert text as appropriate]

## TLU-13 Advanced Technology Incentives

### Mitigation Option Description

Technology will play a vital role in dramatically reducing carbon emissions from the cars of the future. Fuel cells, plug-in hybrid, low weight carbon-fiber bodies, and other technologies will require research, development, and commercialization. Because of its strong research university and both its high-tech and auto parts manufacturing, there may be an opportunity for the Department of Commerce to play a role to encourage advanced automobile technology research and recruit the new generation of manufacturers.

The study would evaluate if there is an economic opportunity around the development and commercialization of advanced technology vehicles and suggest possible models for the Department of Commerce to take advantage of such opportunities.

### Mitigation Option Design

- **Goals:**
  1. To enable North Carolina's economy to establish itself in the research, development, and commercialization of advanced automotive technologies.
  2. To grow North Carolina's capacity to recruit sustainable industry.
- **Timing:** long range e.g. 10 year investment plan
- **Coverage of parties:** NC Department of Commerce, NC Economic Development Board
- **Other:** [Insert text if/as appropriate]

### Implementation Mechanisms

Tax incentives; education of industrial recruiters, possible formation of a NC Advanced Technology Institute

### Related Policies/Programs in Place

Existing sustainable business recruiting efforts by the Department of Commerce.

### Types(s) of GHG Reductions

[Insert text as appropriate]

### Estimated GHG Savings and Costs per MTCO<sub>2</sub>e

[Insert text as appropriate]

- **Data Sources:**
- **Quantification Methods:**

- **Key Assumptions:**

**Key Uncertainties**

[Insert text as appropriate]

**Additional Benefits and Costs**

[Insert text as appropriate]

**Feasibility Issues**

[Insert text as appropriate]

**Status of Group Approval**

[Pending or Completed]

**Level of Group Support**

[Insert text as appropriate]

**Barriers to Consensus**

[Insert text as appropriate]