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Transportation and Land Use Technical Work Group

Summary List of Recommended Priority Policy Options for Analysis

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2008–2020			
TLU-1	Adopt California Clean Car Standards	0.9*	3.6*	20.8*	TBD	TBD	Pending
TLU-2	Transportation System Management	TBD	TBD	TBD	TBD	TBD	Pending
TLU-3	Tax Credits for Efficient Vehicles	TBD	TBD	TBD	TBD	TBD	Pending
TLU-4	Improve Development Patterns	0.35	2.10	12.47	TBD	TBD	Pending
TLU-5	Transit & Bike-Pedestrian	Quantified as Part of TLU-4			TBD	TBD	Pending
TLU-6	Alternative Fuel Infrastructure	Quantified as Part of TLU-12			TBD	TBD	Pending
TLU-7	Diesel Engine Emission Reductions and Fuel Efficiency Improvements	TBD	TBD	TBD	TBD	TBD	Pending
TLU-8	Stricter Enforcement of Speed Limits	TBD	TBD	TBD	TBD	TBD	Pending
TLU-9	Make Full Use of CMAQ funds	Not quantified					Pending
TLU-10	Commuter Choice	TBD	TBD	TBD	TBD	TBD	Pending
TLU-11	Explore Available Resources for Funding Road Maintenance and Mass Transportation	0.06	0.34	1.82	TBD	TBD	Pending
TLU-12	Low-GHG Fuel Standard	0.35	3.57	17.07	TBD	TBD	Pending

* **Baseline for determining emissions reduction from the adoption of the California Clean Car Standards in South Carolina does not, as of yet, include the new federal Corporate Average Fuel Economy (CAFE) standards enacted on December 18, 2007. Please refer to the quantification discussion under TLU-1 for further details.**

TLU-13	Freight Vehicle Technology Improvements	Quantified as part of TLU-7			TBD	TBD	Pending
TLU-14	Rail	TBD			TBD	TBD	Pending
	Sector Total After Adjusting for Overlaps						
	Reductions From Recent Actions						
	Sector Total Plus Recent Actions						

TLU-1. Adopt California Clean Car Standards

Policy Description

Reduce greenhouse gas emissions from new motor vehicles (cars and light trucks) sold in South Carolina by adopting legislation equivalent to the California Clean Car Standards (Assembly Bill 1493 also known as “Pavley” the name of the California lawmaker who sponsored the legislation).

California adopted legislation in 2002 (and regulations in 2004) requiring a reduction in greenhouse gas emissions from new cars and light trucks sold in that state beginning with model year 2009. California plans an eight-year phase in.

The California standards incorporate the four main global warming emissions including carbon dioxide, methane, and nitrous oxide resulting directly from the operation of the vehicle (tailpipe emissions) as well as hydrofluorocarbon emissions resulting from leakage from or operation of the air conditioning system.

Policy Design

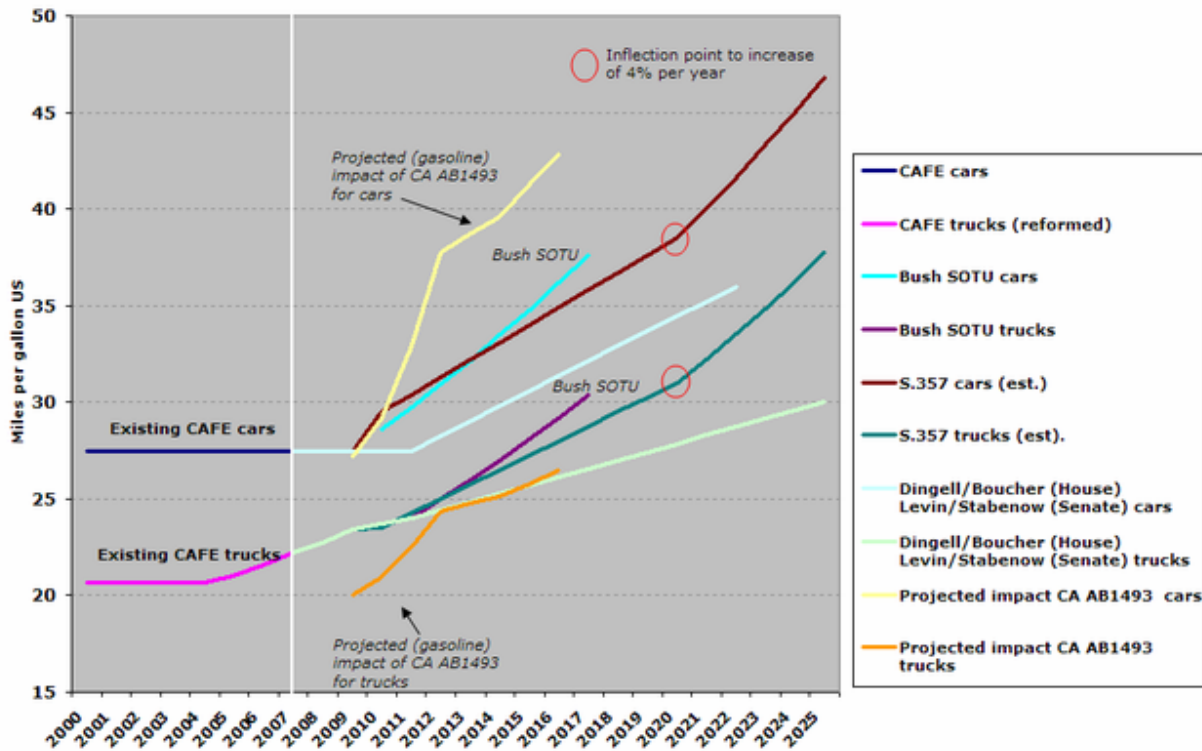
Goals: Adopt California’s Clean Car program.

- **Timing:** If adopted, the standards would take effect no earlier than the 2011 model year and be phased in over a specified period of time.
- **Parties Involved:** State, auto dealers
- **Other:**
 - Ensure that, to the extent possible, SC dealers be able to trade stock with dealers in neighboring states.
 - Encourage neighboring states to adopt as well.

For comparison information, the California (AB 1493) standard is shown together with other proposals below:[†]

[†] http://www.greencarcongress.com/2007/06/pending_fuel_ec.html

Projected Impact of US Fuel Economy Proposals June 2007



Implementation Mechanisms

TBD

Related Policies/Programs in Place

The Clean Air Act requires the federal government (EPA) to set limits on air pollutants emitted from the tailpipes of new motor vehicles. California is the only state allowed to deviate from the standards set by the federal government, and it is only allowed to do so if its standards are at least as protective of human health as the federal standards, and it obtains a waiver from the EPA. Other states have the choice of adopting the federal standards or the California standards and since California’s adoption of the Clean Car Standards, 12 additional states have adopted similar standards.

While CA is still waiting on a waiver from the EPA and has recently decided to file a suit against the EPA for its failure to act on CA request for a waiver, recent court challenges to regulating greenhouse gases have supported governmental authority to do so. Two cases of particular interest are the U.S. Supreme Court decision in *Massachusetts v. EPA* and the recent ruling upholding the Vermont Clean Cars law.

With regards to the Supreme Court Decision in *Massachusetts v. EPA*, the Supreme Court ruled in favor of Massachusetts et al, finding that EPA has the authority to regulate CO2 and other greenhouse gases. Massachusetts and eleven other states, along with several local governments and non-governmental organizations (petitioners), sued the EPA for not regulating the emissions of four greenhouse gases, including carbon dioxide (CO2), from the transportation sector. The petitioners

claimed that human-influenced global climate change was causing adverse effects, such as sea-level rise, to the state of Massachusetts.

With regards to the Vermont Clean Cars Law, U.S. District Judge William Sessions, rejected automakers' central argument against the laws in both states - that the only way to reduce greenhouse gas emissions is to increase fuel economy, an area regulated exclusively by the federal government. Additionally, Judge Sessions ruled that auto manufacturers can meet the new standards adopted by California and 14 other states.

Finally, it is also worth noting that there are two Federal actions to reduce fuel consumption pending. EPA is developing GHG standards for motor vehicles because of a recent Supreme Court ruling and Congress is debating an energy bill which may result in higher CAFE standards for the industry.

Types(s) of GHG Reductions

Carbon dioxide, methane, and nitrous oxide resulting directly from the operation of the vehicle (tailpipe emissions) as well as hydrofluorocarbon emissions resulting from leakage from or operation of the air conditioning system.

Estimated GHG Reductions and Net Costs or Cost Savings

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
		2012	2020	Total 2008–2020			
TLU-1	Adopt California Clean Car Standards	0.9*	3.6*	20.8*	TBD	TBD	Pending

****Please note that the baseline for this quantification does not take the new CAFE standards into account for the following reasons****

On December 18, 2007, President Bush signed the Energy Independence and Security Act of 2007, which established new federal Corporate Average Fuel Economy (CAFE) standards. CCS is currently working to understand the relationship between the new CAFE standards and the California Clean Car standards, and whether adopting the CA standards in SC would produce additional GHG reductions on top of those from the new CAFE standards. What is provided as GHG reductions in the table above and in the detailed explanation below relates to the old CAFE standards and not the newly established CAFE standards.

Please note that on January 2, the California Air Resources Board released its analysis of the relationship between CA Clean Car and federal CAFE, providing much more detail on the subject than had previously been available from any source. In sum, the landscape around this option has changed very quickly.

As CCS continues its work on quantifying this option around the new parameters, please find below, links to the materials that are currently available on this new development:

1. Press release on California's petition for review of EPA's denial of its waiver request, January 2, 2008 in the U.S. Court of Appeals for the Ninth Circuit: <http://ag.ca.gov/newsalerts/release.php?id=1514&>. Petition itself and EPA's denial letter are at the bottom of the page.
 2. Petition was supported by: "California Air Resources Board Technical Assessment: Comparison of Greenhouse Gas Reductions Under CAFE Standards and ARB Regulations Adopted Pursuant to AB1493", January 2, 2008. At: http://www.arb.ca.gov/cc/ccms/ab1493_v_cafe_study.pdf
- **Data Sources:**
****Please note that the baseline for this quantification exercise does not take the new CAFE standards into account****
 - California Environmental Protection Agency (CalEPA), CARB, "Economic Impacts of the Climate Change Regulations: Technical Support Document for Staff Proposal Regarding Reduction of Greenhouse Gas Emissions from Motor Vehicles," August 6, 2004
 - CARB Staff Presentation, "Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles," September 23, 2004
 - Diane Brown and Elizabeth Ridlington, Cars and Global Warming: Policy Options to Reduce Arizona's Global Warming Pollution from Cars and Light Trucks, Arizona 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:**
****Please note that the baseline for this quantification does not take the new CAFE standards into account****
 - The CARB, the PIRGs, and a coalition of New England States have all calculated the impact of the Pavley standards on GHG emissions. CCS reviewed and compared results of these analyses of clean car programs, and found all three modeling efforts to be reasonable and valid. The PIRG model has been applied in Connecticut, Arizona, and New Mexico. The model estimated a 13.7% reduction in GHG emissions from passenger vehicles by 2020 in Arizona and a 12% reduction in Connecticut. Both CARB and the New England states estimated higher reductions, in the range of 18%–19%. The primary sources of variation in these modeling efforts are 1) the future mix of VMT by passenger vehicle type and 2) the fleet penetration rate.
 - CCS assumes the effects of the Clean Car Program in South Carolina will be greater than the PIRG model results for Connecticut and Arizona, and less than the results of the California and New England modeling efforts. CCS estimates the effect on South Carolina GHG emissions in 2020 to be the median of the lower and upper bounds of prior modeling efforts, or 15.5%.

- **Key Assumptions:**

****Please note that the baseline for this quantification does not take the new CAFE standards into account****

- **The prior 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

*****Please note that the baseline for this quantification does not, as of yet, take the new CAFE standards into account*****

The net emissions impact of this policy depends on fleet turnover rates for light-duty vehicles and future patterns of consumer purchase choices between passenger cars and light-duty trucks in South Carolina.

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-2. Transportation System Management (TSM)

Policy Description

Transportation system management (TSM) improves vehicle flow on the roadway system, which can reduce fuel use and GHG emissions. Coordinated operation of the regional transportation network can improve system efficiency, reliability, and safety. Tools to reduce traffic congestion include HOV lanes, improving mass transit services, roundabouts at intersections, synchronized signals, incident management, variable message signs, varying work schedules, and other forms of intelligent transportation systems (ITS).

Coordinating a variety of tools within a congested corridor can maximize benefits to motorists and transit users. For example, low-cost bus lanes can be implemented by converting the shoulders of a congested urban freeway to allow peak-hour bus use. An incident management system -- SCDOT provides a Motorist Assistance Patrol (MAP) in several interstate corridors currently -- would respond to disabled vehicles and remove them quickly from the bus lanes. Computer-controlled coordinated signal systems on the arterial routes reduce delay for motorists and offer the option for buses to pre-empt traffic signals to improve reliability and reduce transit travel times.

Policy Design

Goals: Use infrastructure management to reduce emissions by 10% by 2025 relative to the baseline in the most congested corridors in each of South Carolina's three largest metro areas.

Goal would be achieved by implementing pilot TSM projects in the most congested corridors in each of South Carolina's three largest metro areas -- Charleston, Columbia, and Greenville. The pilot projects should include:

1. Installation of necessary fiber optic cable and computerized traffic control systems to coordinate signal timing in the corridor,
 2. Transit service improvements including limited stop or express bus service with traffic signal preemption equipment, and
 3. At least one other TSM strategy that would be effective in the corridor.
- **Timing:** Begin implementation ASAP.
 - **Parties Involved:** SCDOT Office of Planning, SCDOT Traffic Engineering, MPO planners, and transit officials.
 - **Other:** [As needed]

Implementation Mechanisms

Additional funding is needed to provide SCDOT engineering staff to effectively manage an expanded computerized traffic signal system; like all "expert systems" this technology does require ongoing maintenance and attention to work effectively.

Related Policies/Programs in Place

Coordinated signal systems in Wade Hampton Blvd. (US 29) and Woodruff Road (SC 146) corridors in Greenville

SCDOT Motorist Assistance Patrol

Variable Message signs in some Interstate corridors

Smartride –limited stop commuter bus service between Columbia and the Lugoff/Camden and Newberry areas.

CARTA Express –limited stop commute alternative that connects area residents into downtown Charleston.

York County -82x Express Bus service to Charlotte. Started in 2001, 214 daily riders.

Proposals to implement limited stop commuter service in the I-385 corridor serving Mauldin and Simpsonville

This policy would support:

- TLU 4 – Improve Development Patterns
- TLU 5 – Transit and Bike-Pedestrian
- TLU 10 – Commuter Choice Programs

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-2	Transportation Systems Management	TBD	TBD	TBD	TBD	TBD

- **Data Sources:**
- **Traffic counts and projections on designated congested corridors in the Greenville, Columbia, and Charleston urban areas provided by SCDOT and MPOs.**
- **Annual VMT by vehicle and facility type from FHWA, Highway Statistics 2005 (VM-1)**
- **Quantification Methods:**

- *Note: Actual estimates will follow, pending identification of all corridors and acquisition of traffic data.*
- CCS asked each of the MPOs in the Greenville, Columbia, and Charleston urban areas to identify candidate corridors for TSM measures. We then estimated annual VMT on each of these corridors using available traffic counts and projections. VMT for each segment is estimated as the length of the segment times the mean of traffic counts from each available count site on the segment. We distribute VMT between light- and heavy-duty vehicles based on national averages for urban roads (FHWA, Highway Statistics). Baseline GHG emissions are estimated using average grams of GHGs emitted per VMT from the state GHG inventory.
- The stated goal of the policy is to reduce baseline emissions by 10% by the year 2025. Given the time needed to plan, fund, and implement TSM measures, we assume that emissions reductions begin in year 2010. Increasing steadily, emissions reductions reach 7% in 2020. We multiply this percentage by the baseline GHG emissions to derive tons of emissions reduced.
- This method produces a conservative estimate of emission reductions because the baseline figure underestimates GHG emissions on these corridors. A disproportionate amount of vehicle idling occurs on these corridors as cars and trucks wait at crowded intersections and negotiate traffic accidents. Additional fuel burned by vehicles idling and traveling at sub-optimal speeds represents additional GHG emissions on these corridors. These emissions are not captured by the grams per VMT factor applied. Existing emissions models do not allow us to estimate these additional emissions with any degree of certainty.
- **Key Assumptions:** The majority of GHG emissions on the designated corridors are attributed to VMT, not to congested conditions.

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-3. Tax Credits for Efficient Vehicles

Policy Description

The state of South Carolina has already made significant progress in the area of tax incentives for alternative and energy efficient vehicles. A maximum of \$300 sales tax rebate will be available beginning July 1, 2008 for in-state purchases of new, used, or leased low-GHG vehicles including pure electric, hybrid, plug-in hybrid, flex-fuel, lean-burn, hydrogen, and vehicles with a city fuel-economy rating by the United States Environmental Protection Agency (EPA) of thirty miles a gallon or higher (Act No. 83, 2007). Up to a \$500 sales tax rebate will be offered for EPA-certified equipment that converts a conventional vehicle to an alternative fueled vehicle that will operate on propane, compressed natural gas, liquefied natural gas, hydrogen, or E85 (Act No. 83, 2007). The sales tax rebates will be phased out on July 1, 2013. A \$2,000 income tax credit will also be available beginning January 1, 2008 for in-state purchases of plug-in hybrid vehicles (Act No. 83, 2007). The income tax credits for plug-in hybrids will be phased out on January 1, 2011. In 2006 the state began offering an income tax credit for alternative fueled and hybrid vehicles equal to 20% of the federal credit (Act No. 312, 2006). There is no phase-out period for this state income tax credit.

Unfortunately, despite the good intentions of the legislation, there are some necessary improvements. The sales tax rebates in Act No. 83, 2007 are capped collectively at \$4,150,000. In the short term this may not present a problem, but as these vehicles become more common it will be difficult to determine which buyers will be able to claim the sales tax rebate. The same concept applies to the state income tax credit for plug-in hybrid vehicles which is capped at \$200,000. Additionally the language in Section 12-63-20 (A)(1)(e)(3) regarding the 20% phase-in each year of the program is restrictive and confusing.

Other state incentives that were considered included reduced or free registration fees for low-GHG vehicles. The committee decided that a reduced or free registration fee would not be an additional incentive due to the low-cost of state fees, and the program would be difficult and costly to administer.

The committee also evaluated the option of a feebate for all vehicles. The concept of a feebate is to tax high-GHG emission vehicles and offer tax incentives for low-GHG emission vehicles. The committee felt strongly that this option would present an undue burden to state residents and would be difficult and costly to administer the program.

Policy Design

Goals: Maintain and enhance the current state tax rebates and state income tax credits for low-GHG emission vehicles. Among the improvements needed in state legislation are presented in Act No. 83, 2007 include:

- 1) SC Code 12-63-20(1)(a) – \$300 rebate for E-85 Flex-fuel vehicles - remove \$2,050,000 cap.

- 2) SC Code 12-63-20(1)(b-e) – \$300 rebate for Hybrids, plug-in hybrids, electric, hydrogen-fueled, lean-burn, and high fuel economy vehicles as well as equipment to convert conventional vehicles to operate on alternative fuels - remove \$2,100,000 cap.
- 3) Section 12-63-20 (A)(1)(e)(3) – remove legislation regarding the phase-in of the rebate program.
- 4) SC Code 12-6-3376 – \$2,000 tax credit for plug-in hybrid vehicles - remove \$200,000 cap.

- **Timing:** These improvements to legislation should be made by the end of the 2008 legislative session since beginning July 1, 2008 the majority of the state incentives for low-GHG emission vehicles will go into effect.
- **Parties Involved:** South Carolina General Assembly, South Carolina Biomass Council, South Carolina Automobile Dealers, Alternative vehicle advocates, and private vehicle owners

Implementation Mechanisms

- Amendments as defined above in the Goals section to Act No. 83, 2007.

Related Policies/Programs in Place

2006 – 2007 – In FY07 Budget Appropriations, the SC General Assembly established \$300 sales tax rebates for flex-fuel, hydrogen fuel cell, and plug-in hybrid vehicles. The appropriation also established up to a \$500 sales tax rebate for hybrid to plug-in hybrid conversion equipment.

2006 – 2007 – Act. No. 312 – The South Carolina General Assembly established the state income tax credit for alternative fuel and hybrid vehicles that mimicked the federal tax credits established in the Energy Policy Act of 2005. The state income tax credit is worth 20% of the federal income tax credit.

2008 – 2012 – Act. No. 83 – The South Carolina General Assembly passed a series of sales tax and income tax credits that expanded upon the FY07 Budget Appropriation as outlined above.

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-3	Tax Credits for Efficient Vehicles	TBD	TBD	TBD	TBD	TBD

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-4. Improve Development Patterns

Policy Description

South Carolina is growing rapidly, and where that development locates has substantial impacts on GHG emissions. Growth can be accommodated in a variety of ways that reduce emissions. The overall goal of this policy option is to help South Carolina grow in a way that protects the state's environment, climate, economy, and quality of life. To give two examples:

1. *Infill and brownfield developments* produce less vehicle travel and emissions than development on lower density exurban or "greenfield" locations. Households and workers in areas with higher density and mixed uses take shorter trips and use more alternatives to automobile travel. "Brownfields" are one type of infill location – commercial or industrial properties that are abandoned or are not being fully used because of actual or perceived environmental contamination.
2. *Transit oriented development* lets people drive less by building compact, mixed-use development clustered around transit stops.

Policy Design

Goals:

The goal of this policy is to stabilize per-capita vehicle-miles traveled at today's levels by 2010, by implementing the following:

1. Expand the state incentives for brownfield redevelopment in South Carolina. These incentives could include grants or loans, with preferences given to projects that meet sustainable development principles;
2. Amend the Comprehensive Planning Act to require all counties in South Carolina to establish planning commissions and to require those commissions to prepare comprehensive plans;
3. Amend the Comprehensive Planning Act to require planning commissions to assess the impact of their comprehensive plans on greenhouse gas emissions;
4. Reestablish the Division of Regional Development and provide adequate funding for the Division to meet its responsibilities under the law;
5. Implement the recommendations of the Quality of Life Task Force
6. Implement the 5 recommendations and the strategies that have been outlined in detail for each of the recommendations in the Growing by Choice or Chance report
7. Expand the state incentives for conservation such as by improving the tax credits for conservation easements;
8. Increase the amount of funding for the South Carolina Conservation Bank and the South Carolina Heritage Trust program.

9. Provide state incentives and resources to encourage planning and implementation of plans.
- **Timing:** Begin implementing these immediately
 - **Parties Involved:** State, regional, and local planning authorities
 - **Other:** [As needed]

Implementation Mechanisms

Implement the recommendations of the Quality of Life Task Force *which fall under five categories:*

I. COMMUNITY GROWTH

a. Community Schools

- i. Eliminate minimum acreage requirements; cap student populations for future facilities.
- ii. Require coordination among school boards and local governments to plan school sites and avoid conflicts.
- iii. Favor restoration and construction of community-based small schools over new construction of remote mega schools.

b. Efficient Public Investment

- i. Require fact-based decision-making: major projects should conform to adopted plans, developed by local authorities, to keep politics from guiding infrastructure decision-making,
- ii. Public entities should plan where they build and only build where they plan.
- iii. Local governments coordinate with other local authorities to designate priority investment areas which will receive funding preferences
- iv. Highway system maintenance should take precedence over new roads

c. Affordable Housing

- i. Reduce regulations that are inefficient and excessively impact housing affordability, particularly for lower income and minority families.
- ii. Support private-sector efforts in affordable housing and community development .

d. Predatory Lending

- i. Protect home and automobile buyers from predatory lending practices.

e. Traditional Neighborhoods

- i. Remove legal impediments to traditional neighborhood designs and provide incentives for the construction and revitalization of traditional neighborhoods.

f. Public Transportation

- i. Integrate transportation planning with land use planning so public transit can make a comprehensive contribution to economic development and mobility.
- ii. Evaluate public transportation opportunities, including intra-regional and inter-regional systems.

g. Protecting Traditional Communities

- i. Evaluate rural communities and designate those which have served as ancestral habitation for more than 100 years as historic areas; require that eminent domain processes respect this designation.

h. Downtown Revitalization

- i. Work with Community Builders, MainStreet programs, and other non-governmental organizations to encourage downtown renewal and revitalization projects.

II. LAND CONSERVATION

a. Conservation Incentives

- i. Raise the per acre cap in the Conservation Incentives Act; raise the maximum annual credit.
- ii. Increase funding for the South Carolina Conservation Bank.

b. Heirs' Property

- i. Endorse and support existing private initiatives addressing this issue.

c. Focus Area Expansion

- i. Encourage public/private partnerships in promoting conservation initiatives based on the ACE basin model.

d. Traditional Agriculture and Forestry

- i. Support farmland protection initiatives.

e. Best Development Practices

- i. Develop and promote incentive-based standards for use by landowners to implement conservation measures in their land management practices or for new development.

f. Natural Resource Education

- i. Support curricular efforts to teach students the value of conservation of SC natural resources.

III. REGULATORY REFORM

a. Streamline Agencies, Consolidate Permitting Processes, and Eliminate Wasteful Appeals

- i. Agency processes should be made user-friendly by streamlining permitting processes, reducing the time to act on permit applications, and coordinating with sister agencies to eliminate redundancies.
- ii. Assure that agencies are run by the fewest but most capable people

b. Provide Incentives for Infill and Re-Development of Greyfield and Brownfield Areas

- i. Local and state incentives could include expedited, prioritized processing of approvals; reduced impact fees; and other economic incentives.

c. Adopt Property Rights Legislation Consistent with the Quality of Life Task Force Vision Statement

- i. Provide property owners and local governments the opportunity and flexibility to mediate land use regulation disputes.

d. Eliminate "Postage Stamp" Appeals of Regulatory Permits

e. Adopt Additional Protection for Isolated Freshwater Wetlands Based on Function and Size

- i. New regulations should not be "one-size-fits-all" but graded by function and size.

f. Reform Annexation and Condemnation Laws

IV. RESOURCE INVENTORY/UNIFORM VISION

- a. Sponsor a statewide visioning process based on citizens' input and a bottom-up approach.

- b. Support coordination of existing resource data for use in all aspects of land use planning.
- c. Support training and technical assistance to local governments in vision-driven planning.

V. WATER RESOURCES

a. Coordinated Position on Dam Relicensing

- i. Insist on coordination among state agencies, facilitated by the governor’s office.
- ii. Develop drought contingency plans which include improved release strategies.

b. Proactive Management of Water Supplies

- i. Exercise more control over the flow of the state’s waters to assure the protection of the needs of South Carolina citizens and industry.

c. Multi-State Water Use Agreements

- i. Develop “compacts” with North Carolina and Georgia to better manage our water resources.
- ii. Work with other governmental entities, utility companies and non-governmental to develop regional solutions to regional problems.

Related Policies/Programs in Place

The South Carolina Comprehensive Planning Act gives local governments the authority to establish planning commissions. If established, these commissions have certain powers and responsibilities, including “the function and duty . . . to undertake a continuing planning program for the physical, social, economic growth, development, and redevelopment of the area within [their] jurisdictions.” In addition, these commissions must prepare comprehensive land use plans that address the following elements: (1) population; (2) economic development; (3) natural resources; (4) cultural resources; (5) community facilities; (6) housing; (7) land use; (8) transportation; and (9) priority investment. The planning commissions must review their plans at least every five years and update them at least every ten years. The commissions have “the power and duty” to recommend to the local governing authority measures for implementing the plan, such as zoning ordinances, subdivision regulations, landscaping ordinances, and capital improvement programs. The local governing authority may, after receiving a favorable recommendation from the planning commission and holding a public hearing, adopt the land use plan in whole or in part or reject it.

The South Carolina Comprehensive Infrastructure Development Act, passed in 1997, created a new division within the South Carolina Budget and Control Board called the Division of Regional Development (DRD) and gave it responsibility “for the creation of a state infrastructure development plan, for the coordination of regional infrastructure development plans, and for the coordination of state programs and resources that impact or affect infrastructure development.” The law directs the ten Regional Councils of Government (COGs) to develop regional infrastructure plans in cooperation with the DRD, and the DRD must consider those plans in creating the statewide infrastructure plan. The South Carolina General Assembly never provided any funding for the DRD, and the Budget and Control Board has dissolved it. The law, however, is still on the books.

In his first State of the State address in January, 2003, Governor Mark Sanford declared that maintaining and improving the State’s quality of life was one of the top priorities of his

administration. This was soon followed by the report from the Governor’s “Quality of Life Task Force,” which contains over thirty “smart growth” recommendations.

Another important effort is the “South Carolina Quality Growth Initiative,” launched in 2001 by the Urban Land Institute and the South Carolina Real Estate Center at the University of South Carolina. The sponsors assembled a broad based steering committee of 36 people, composed of developers, public officials, scholars, business leaders, environmental advocates, and concerned citizens from across the state, to guide and oversee the initiative. A statewide symposium and four regional forums were held to hear from the public on growth and development issues. In 2004, the steering committee issued its final report, *Growing by Choice or Chance: State Strategies for Quality Growth in South Carolina*, which sets forth ten basic principles of quality growth and five recommended actions at the state level.

Finally, conservation and open space protection includes programs designed to protect and conserve important lands and natural resources in the State and to provide active and passive parks for public use and enjoyment. This option could also include policies to discourage the expansion of urban growth areas or urban growth boundaries. Policies that increase the value of rural lands for agricultural or forestry uses to serve local markets can promote these objectives.

The principal sources of funding for conservation at the state level are the South Carolina Conservation Bank and the Heritage Trust program. Both programs are funded by a portion of the deed recording fees, which are collected when real estate is sold in the State. A few counties in the State currently provide significant funding for conservation and open space protection.

Brownfield Redevelopment

Current state law encourages brownfield redevelopment by offering liability protection contracts for non-responsible purchasers of contaminated property (S.C. Code § 44-56-71- et seq.) and by providing state income tax credits (§ 12-6-355), job tax credits (§ 12-6-3360(e)(2)), reduced investment minimum for fee in lieu of property taxes (§ 4-12-30(B)(3)), and 5 year property tax exemption at the option of local government (§12-37-220(44))

Priority Investment Act (“PIA”)

S266 became law on May 23, 2007. The Act amends the Local Government Comprehensive Planning Enabling Act of 1994 to improve the local government comprehensive planning process and to provide local governments new zoning tools.

The PIA adds two new elements to the comprehensive planning process. The Act provides for a specific transportation element requiring local governments to consider all transportation facilities (including roads, transit projects, pedestrian and bicycle projects) as part of a comprehensive transportation network. The Act also adds a new priority investment element, which requires local governments to analyze available public funding for public infrastructure and facilities over the next ten years and to recommend projects for expenditures of those funds for needed public infrastructure. This element will require more prioritized planning for public infrastructure and facilities such as water, sewer, roads, and schools. Additionally, the priority investment element requires a basic level of coordination between local governments. The Act requires that the priority investment element be developed through coordination with “adjacent and relevant jurisdictions and agencies.” All governmental entities and utilities - counties,

municipalities, public service districts, school districts, public and private utilities, transportation agencies and other public entities - that are affected by or have any planning authority over the public project identified in the priority investment element must be consulted in the coordination process. The Act provides for a basic level of coordination requiring written notification to the other agencies and an opportunity for comment on the proposed projects.

The PIA also provides for two new zoning tools to promote affordable housing and traditional neighborhood design. The Act requires that local governments carefully analyze regulatory requirements affecting the affordability of housing and to identify those nonessential housing regulatory requirements that are not necessary to protect the public health, safety or welfare and. Local governments must also analyze market-based incentives that may be made available to encourage the development of affordable housing. The Act allows local governments to identify priority investment zones in which local governments may adopt market based incentives or relax or eliminate nonessential housing regulatory requirements in order to encourage affordable housing. Additionally, the Act allows local governments to identify priority investment zones to encourage traditional neighborhood design – communities with mixed residential and commercial uses that look and function like traditional towns and neighborhoods. The Act defines market based incentives to include density bonuses, relaxed zoning regulations such as lot area requirements or setbacks, reduced or waived fees, fast track permitting and design flexibility. Nonessential housing regulatory requirements may include requirements like minimum lot size, setbacks, open space requirements, landscaping, impervious surfaces and parking requirements.

Open Space Protection

Existing state law funding and promoting open space protection includes the Conservation Bank Act (§48-59-10), the Heritage Trust Program of the Department of Natural Resources (§ 57-17-10). and the Conservation Easement Act (§27-8-20).

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

		Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
	Policy	2012	2020	Cumulative Reductions (2008–2020)		
TLU-4	Improve Development Patterns	0.35	2.10	12.47	TBD	TBD

- **Data Sources:**

- **VMT from the SC GHG Inventory and Projections**
- **Population projections from SCDOT**
- **Quantification Methods:**
- **We calculate light-duty VMT per capita for each year from 2008 to 2020. Per capita VMT increases steadily from 10,900 in 2008 to 12,200 in 2020 in the baseline projections. According to the stated goal, we calculate the reduction in GHG emissions with no growth in per capita VMT after 2010.**
- **Key Assumptions: This goal applies to light-duty VMT only.**

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-5: Transit & Bike-Pedestrian

Policy Description

Enable personal trip-making to move from single occupant motor vehicles to lower-GHG-emitting transportation options such as walking, bicycling, ride-sharing and mass transit* and ensure that the state's transportation system is fully integrated with and appropriately serves the development patterns called for under TLU-4.

[**Note:** As used throughout this policy option, the term “mass transit” encompasses both public and specialized transit services operating both within and between rural and urban areas. The term also includes intercity bus, conventional passenger rail service such as Amtrak and commuter rail, High Speed Rail, and other forms of fixed guide-way transit such as Light Rail.]

Policy Design

Goals: Enable personal trip-making to move from single occupant motor vehicles to lower-GHG-emitting transportation options such as walking, bicycling, ride-sharing and mass transit by achieving the following goals:

- Increase personal mobility options and opportunities by expanding and improving bicycle and pedestrian networks and related facilities both as feeders and as stand-alone modes of travel in all areas of the state.
- Increase personal mobility options and opportunities by promoting and creating ride-share programs within both the public and private sectors.
- Increase personal mobility options and opportunities by improving and expanding the state's existing network of mass transit systems and services.
- Increase personal mobility options and opportunities by implementing “complete streets” policies to ensure that all new roadways and streets accommodate all modes of personal transportation where practical and feasible.

Implementation of the above set of policies will stabilize per-capita vehicle-miles traveled at today's levels by 2010.

Timing: The timing for achieving the above listed goals will vary as detailed below.

- Many of the state transportation programs required to achieve the above listed goals are in place and are being implemented to some degree or another.
- Although, many of the state transportation programs required to achieve the above listed goals are in place, additional fiscal resources may be needed to implement them fully. This can only be accomplished through the state transportation budgeting and programming processes, as well as identifying new sources of revenue

- New state transportation programs will need to be created to fully achieve the above listed goals. The creation of these programs will occur through the state legislative process.
- The need for improving and expanding the state's existing network of mass transit systems and services will typically be generated through existing and new transportation planning processes at the state, regional, and local levels.

Parties involved:

- Governor's Office and Cabinet Agencies
- SC Legislature
- SCDHEC (various offices: Air Quality (to document improvements); Division of Obesity Prevention and Control (for advising on the health component to more physically active transportation))
- Palmetto Cycling Coalition
- SC Coalition for Promoting Physical Activity
- Metropolitan Planning Organizations
- Councils of Governments
- Municipalities
- Counties
- Mass transit agencies and providers
- Private sector employers
- Railroads

Other:

- Federal transportation agencies such as the Federal Highway Administration, the Federal Transit Administration and the Federal Railroad Administration.

Implementation Mechanisms

Implement the *State Multi-Modal Transportation Plan* that is scheduled to be adopted by the SCDOT in early 2008.

Create a new state mass transit aid program to fund 50% of the annual operating costs of mass transit systems in SC to be administered by the SCDOT. The SCDOT shall audit the financial records of each aid recipient on an annual basis and shall audit the performance (efficiency and effectiveness) of each aid recipient on a 5-year cycle.

Create a new state mass transit aid program to fund 90% of the costs of mass transit projects designed to test and evaluate the costs and benefits of innovative ways for the state's mass transit systems to provide mobility. The deployment of innovative technologies shall be encouraged. The program would be administered by the SCDOT.

Create a new state mass transit aid program to fund 50% of the non-federal share of capital improvement projects of the state's mass transit system to be administered by the SCDOT. All facility renovation or new facility construction projects funded under this program shall be

designed to meet appropriate Leadership in Energy and Environmental Design (LEED) standards promulgated by the US Green Building Council.

Create a new state program to aid communities in the retrofitting of pedestrian and bicycle infrastructure that was frequently omitted over a 50+ year period from the mid 1940's to the mid 1990's. This could be stand-alone funding or designated to combine with existing federal programs, such as Transportation Enhancements, Safe Routes to Schools, or others.

[Note LEED certification provides independent, third-party verification that a building project meets the highest green building and performance measures. All certified projects receive a LEED plaque, which is the nationally recognized symbol demonstrating that a building is environmentally responsible, profitable and a healthy place to live and work.]

Related Policies/Programs in Place

Public Transit Aids

The South Carolina Department of Transportation (SCDOT) receives funding from the Federal Transit Administration (FTA) annually for public transportation activities in South Carolina. SCDOT also receives ¼ of a cent of the State's gasoline tax (approximately \$6.0 million annually) and approximately \$0.1 million from the State General Fund. These state funds, together with local funds, are used to match federal funds made available under a variety of programs. [See **Appendix A** for a description of these programs.]

Bicycle & Pedestrian

- SCDOT Commission Resolution regarding Bicycling and Walking
- Engineering Directive Memorandum 22 (Bicycling Provisions in projects)
- Complete Streets policies in place locally (CHATS, SPATS, City of Columbia, etc.)
- Biannual bicycle and pedestrian conference held by SCDOT in conjunction with a planning conference. This effort is a portion of the outreach/technical assistance effort of the pedestrian and bicycle engineer at SCDOT. The Pedestrian and Bicycle Engineer provide continuing help to local governments (municipalities, counties, MPOs and COGs) in the provision and improvement of facilities for the non-motorized modes.
- Annual Bike Month (League of American Bicyclists) and National Bike to Work Day are held during May. Many local governments promote this activity. Palmetto Cycling Coalition is a partner.
- Safe Routes to Schools office has been established at SCDOT (and all state DOTs.)

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)	Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
TLU-5	Transit & Bike-Pedestrian	Quantified as Part of TLU-4	TBD	TBD	Pending

- **Data Sources:** Described in detail under TLU-4 above.
- **Quantification Methods:** This policy option is expected to contribute to a stabilization of VMT per capita along with TLU-4 above. Please refer to the quantification methods under TLU-4 for details.
- **Key Assumptions:** Described in detail under TLU-4 above.

Key Uncertainties

Described in detail under TLU-4 above.

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-6: Alternative Fuel Infrastructure

Policy Description

This policy option seeks to increase market penetration of alternative fuels in South Carolina through accelerated infrastructure development. This policy will support a diversity of supply to our transportation fuel market so that consumers have more choices in the transportation fuel they use. Additionally, this policy option will reduce GHG emissions through the increased access to cleaner burning alternative fuels.

Development of an alternative fuel infrastructure, including storage and distribution systems, can aid in the promotion of alternative fuel usage. The expense of equipment and installation costs can be offset by creating an infrastructure connecting key corridors in the southeast. The development of convenient locations of stations offering alternative fuels at competitive prices can increase the usage of the fuels. Alternative fuels include ethanol, biodiesel, compressed natural gas, propane, electricity, and hydrogen.

Policy Design

Goals:

Support the implementation of the TLU-12 goal of decreasing the net lifecycle carbon in South Carolina's total transportation fuels by 10% in 2025

Expanding alternative fueling infrastructure is key to the increased market penetration of alternative fuels and increasing the number of alternative fuel vehicles in South Carolina. The goals for this policy will aid decision-makers, businesses, and the general public in the increased production of alternative fuels, increased fuel use, and technology necessary for the expansion of alternative fuels. Outcomes will support energy supply diversity, benefit the environment, and create economic opportunities in South Carolina.

This option is linked with TLU-11: Increased Fuel Tax (with use of revenue for travel alternatives) and TLU-12:Low-GHG Fuel Standard.

- **Timing:** [TBD, as needed on TWG approval]
- **Parties Involved:** [TBD, as needed on TWG approval]
- **Other:** [As needed]

Implementation Mechanisms

To be successful, this policy would incentivize fuel production, increased efficiency of the distribution network including bulk fuel distribution terminals, blending facilities, rail service,

over the road tankers, and fueling stations. Funds for these implementation mechanisms could be generated through a portion of the fuel tax, vehicle registrations, CMAQ funds, etc.

This policy would benefit from the following:

Incentives for Retailers and Distributors

- Pursue expanded incentives for retailers including tax credits, grants or low-interest loans for infrastructure installation.
- Provide state funds and/or loan guarantees for construction of storage and distribution infrastructure.
- Provide state funds for statewide marketing of availability and benefits of alternative fuels.

Incentives for Consumers

- Pursue expanded incentives for vehicle purchase and demonstrated fuel use.
- Create fuel-cost buy-down program to ensure reduced fuel costs.

Information and Education

- Use information and education outreach to encourage retailers and distributors to install infrastructure. Provide retailers, fleets and public with information on the beneficial environmental and economic effects of using alternative fuels.
- Provide alternative fuel interstate signage through state funding or reduced costs. SCDOT oversees interstate signage program. Reduced rates for alternative fuels could be implemented.

Revisions to Existing Legislation:

- **SC Code 12-63-20(B)(1)-(C)(2) – Remove fiscal year caps on incentive payments for retailers selling alternative fuels and modify payment date to begin July 1, 2008 as opposed to July 1, 2009.**
- **2) SC Code 12-6-3610 – Remove fiscal year caps for tax credit for ethanol and biodiesel dispensing equipment.”**

Related Policies/Programs in Place

- Palmetto State Clean Fuels Coalition—a collaboration of public and private agencies and businesses working to promote the acquisition and use of alternative fuel vehicles and to create a network of alternative fuel facilities.
- South Carolina Incentives for Fuel Production.
- South Carolina Incentives for Fuel Distribution.
- South Carolina Tax Credits for Installation of alternative fueling infrastructure.
- Federal Tax Credits for Alternative Fuel Vehicle Refueling Property.
- South Carolina Incentives for Alternative Fuel Vehicles.
- Federal Tax Credits for Alternative Fuel Vehicles.
- The Energy Policy Act of 2005 includes provisions requiring an increasing volume of renewable fuel to be included in the gasoline sold in the United States. The Act instructs the Environmental Protection Agency (EPA) to establish a Renewable Fuel Standard

(RFS) program to oversee the increase. In April 2007, the EPA issued a rulemaking that requires refiners, blenders, and importers of motor vehicle fuels to increase the proportion of renewable fuel in their products.

- USDA Biomass Fuel Incentive Program.
- USDA Energy Grants and Loans.
- SC DHEC UST Division Alternative Fuels Checklist for installation.
- Existing network of public and private fueling facilities.

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

Option No.	Policy Option	GHG Reductions (MMtCO ₂ e)	Net Present Value 2008–2020 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Level of Support
TLU-6	Alternative Fuel Infrastructure	Quantified as Part of TLU-12	TBD	TBD	Pending

- **Data Sources:** Described in detail under TLU-12 below.
- **Quantification Methods:** TLU-6 is expected to support the implementation of TLU-12 and the goal of decreasing the net lifecycle carbon in South Carolina’s total transportation fuels by 10% in 2025. Please refer to the GHG reductions estimated for TLU-12 below.
- **Key Assumptions:** Described in detail under TLU-12 below.

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-7. Diesel Engine Emission Reductions and Fuel Efficiency Improvements

Policy Description

Reduce diesel emissions and the use of diesel fuel in public and private sectors, both on- and off-road, through promotion of a variety of technologies that provide alternatives to diesel fuel use or greater efficiency in diesel fuel use. This option also has the collateral benefit of improving air quality and reducing air toxics exposure.

Mitigation Option Design

Promote and fund technologies that provide alternatives to petroleum diesel fuel use and greater efficiency in diesel fuel use through continued implementation of effective existing state programs and support of new state programs. These programs include:

- Multi-sector technologies:
 - Broaden use of anti-idling technologies currently available but not widely used for locomotives, trucks and other diesel engines (Applicable sectors: freight, public and private fleets);
 - Engine rebuilds, repowers and replacements with more fuel efficient engines or add-on technologies (Applicable transportation sectors: ferries, freight, public and private fleets);
 - Technologies to reduce rolling resistance (such as single wide tires), low viscosity lubricants, weight reduction and improvements to aerodynamics (Applicable sectors: freight, public and private fleets);
 - Augment or replace petroleum fuel use with biodiesel, biogas, natural gas or other low carbon fuels (Applicable sectors: ferries, freight, ports, public and private fleets); and
 - Replace freight handling equipment with battery electric, hybrid or plug-in electric hybrid equipment (Applicable sectors: ports, freight).
- Supplement Existing Programs: Where applicable, existing effective emission reduction programs for public fleets will promote and fund the technological options listed above.
- New Programs: We also need new programs to reduce private fleet diesel emissions and diesel fuel use. Successful examples include programs similar to California's Carl Moyer grant program or the Texas Emission Reduction Program. Options could include development of a State Infrastructure Bank targeting low and no interest loans and revolving funds for private and public sector use to support scrappage of inefficient technology with more efficient technology.

Other options may include placing diesel emission reduction equipment and fuel use requirements into state and local government public construction contracts to leverage private fleet conversion or creating regulatory requirements to switch fuels and retrofit existing engines and equipment in various fleet sectors.

Goals: Targets and timetables for fuel use reduction and installation of diesel idle reduction equipment in the sectors identified above are presented below. Provide funding for grant and incentive programs to augment the current funding provided by the Legislature in the upcoming legislative session.

1. Broaden use of anti-idling technologies currently available but not widely used for locomotives, trucks and other diesel engines:
 - Public fleets: 50% of vehicles by 2015 with 100% beginning in 2020.
 - Private long haul fleets and other fleets: 25% of vehicles by 2015, 50% by 2020, 75% by 2035 and 100% by 2050.
2. Engine rebuilds, repowers and replacements with more fuel efficient engines or add-on technologies
 - No goals are recommended. These are primarily applicable to marine and locomotive application. Although they have some limited potential, there is little information on which to base a goal.
3. Technologies to reduce rolling resistance (such as single wide tires), low viscosity lubricants, weight reduction and improvements to aerodynamics
 - Private long haul fleets: 50% of vehicles by 2015, 100% by 2020.
4. Augment or replace petroleum fuel use with biodiesel, biogas, natural gas or other low carbon fuels
 - Public fleets: 100% biodiesel use (B100) by 2015
 - Private fleets: 25% B20 use by 2015, 75% B20 use by 2020 and 100% B20 use by 2035.
5. Replace freight handling equipment with battery electric, hybrid or plug-in electric hybrid equipment
 - Battery: 10% of equipment by 2015, 25% by 2020, 50% by 2035
 - Diesel hybrids: 25% of equipment by 2015, 50% by 2020, reducing to 25% in 2035 and zero % in 2050 as they are replaced by plug-in hybrids.
 - Plug-in diesel hybrids: zero % in 2015, 10% by 2020, 25% by 2035 and 50% by 2050.

Timing: by 2015 with milestones

Parties Involved: Legislature, State agencies, regional air agencies, City and County Governments, US Environmental Protection Agency, US Department of Energy, SC Trucking Association, railroads, Ports.

Implementation Mechanisms

TBD

Related Policies/Programs in Place

TBD

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effectiveness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-7	Diesel Engine Emission Reductions and Fuel Efficiency Improvements	TBD	TBD	TBD	TBD	TBD

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-8. Stricter Enforcement of Speed Limits

Policy Description

Reduced vehicle speeds improve fuel economy, reduce CO2 emissions, and improve safety. This could be implemented by increased enforcement of existing speed limits. Significant enforcement resources spread among multiple government units may be needed for this measure to achieve the expected reductions.

Policy Design

Goals: To reduce average vehicle speeds by 5 miles/hour on all highways and major speedways thereby reducing emissions.

- **Timing:** A feasibility study would need to be undertaken to determine if this might be a truly viable option.
- **Parties Involved:** Federal, state, local governments and academic experts.

Implementation Mechanisms

Would depend on the results of the feasibility study, but would probably involve raising and deploying increased enforcement personnel, perhaps increased signage, and employing a significant public information campaign.

Related Policies/Programs in Place

TBD – [as needed and approved by the TWGs]

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-8	Stricter Enforcement of Speed Limits	TBD	TBD	TBD	TBD	TBD

- **Data Sources:** [TBD by CCS on TWG approval]

- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-9. Make Full Use of CMAQ Funds

Policy Description

Fully allocate all CMAQ funding to reduce transportation-related emissions and fund various emission reduction strategies with emphasis on projects that reduce GHGs. Facilitate funding of local matches to support selection and implementation of high-GHG impact projects.

Policy Design

Goals:

- Responsively expend all Congestion Mitigation and Air Quality (CMAQ) funds allocated to the state to reduce emissions in accordance with Federal guidelines.
- Invest in projects and programs that reduce air pollutants in nonattainment and maintenance areas.
- Quantify emission reductions to establish prioritization of projects.
- Include public participation in diversifying projects that reduce greenhouse gas emissions.
- Increase public awareness concerning statewide strategies to reduce congestion and emissions.
- **Timing:** Programs to achieve these goals are currently underway. During the next funding cycle, SCDOT will enhance public awareness of the air quality benefits of existing programs. The public participation process can be created immediately and implemented during each funding cycle.
- **Parties Involved:** SCDOT, FHWA, DHEC, Statewide public participation
- **Other:** FTA, MPOs, EPA as needed

Implementation Mechanisms

Funding is available to states on an annual basis. The state DOT and non-attainment areas receive an allocation based on a pre-established formula. All new projects are selected, evaluated, and approved for inclusion in the Statewide Transportation Improvement Program (STIP).

Related Policies/Programs in Place

USDOT CMAQ Program

SCDOT Incident Responder Program

RFATs - CMAQ Project Funding Process

The primary purpose of the (Congestion Mitigation and Air Quality) CMAQ program is to improve air quality in areas designated by the U.S. Environmental Protection Agency (EPA) as “nonattainment” Because CMAQ funds are intended to improve air quality, funds must be spent in nonattainment or maintenance areas. A nonattainment area is an area formally designated (in the Code of Federal Regulations) by EPA as not meeting the National Ambient Air Quality Standards (NAAQS). A maintenance area is an area that was nonattainment but has subsequently attained the NAAQS and was officially redesignated to attainment by EPA.

The formula for distribution of funds, which considers an area's population by county and the severity of its ozone and carbon monoxide problems within the nonattainment or maintenance area, with greater weight given to areas that are both carbon monoxide and ozone nonattainment/maintenance areas.

CMAQ funds require a state or local match. The typical split between federal and project sponsor is 80 percent Federal, 20 percent State and/or local match.

Funds are apportioned to the State DOTs on an annual basis. Once the funds are apportioned to the State DOT, they are available for four years, and may be "obligated" or dedicated, to specific CMAQ projects.

Eligible projects include:

- Transit and Public Transportation Programs
- Traffic Flow Improvements
- Travel Demand Management Strategies
- Ride Sharing Programs
- Pedestrian and Bicycle Programs
- Education and Outreach
- Inspection and Maintenance Programs
- Extreme Cold Start Programs
- Alternative "Clean" Fuels
- Public/Private Partnerships
- Experimental Pilot Projects

South Carolina receives approximately \$8 million each year in CMAQ funding. The SCDOT utilizes approximately \$6 million annually for an Incidence Response Program. A portion of CMAQ funds (\$2 million) are designated for the non-attainment area at Rock Hill.

SCDOT realized that consequences from highway incidents include traffic congestion, increased fuel consumption, and more air-polluting emissions. A single incident can cause traffic delays that can result in devastating secondary incidents. Minimizing the time needed to return a highway to normal flow can greatly reduce traffic delays and the negative impacts on both highway travelers and the environment. The Incidence Response Program was created and implemented as an incident management tool to assist with traffic flow. The program covers over 400 miles and operates seven days a week on many of South Carolina’s interstate and primary routes. SCDOT Incident Response serves motorists traveling in the Beaufort, Charleston,

Columbia, Florence, Grand Strand/Myrtle Beach, Rock Hill, and Greenville/Spartanburg urban areas

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effectiveness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-9	Make Full Use of CMAQ funds	Not quantified			TBD	TBD

- **Data Sources:** None
- **Quantification Methods:** This policy is not quantified because it does not specify any particular types of projects or programs to reduce GHG emissions. The policy will likely support the achievement of emissions reductions estimated for other policies, including TLU-2, TLU-4, and TLU-5
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-10. Commuter Choice

Policy Description

Enable employers to provide options such as telecommuting, transit subsidies, pre-tax transit fare program, parking cash-out, and guaranteed ride-home service in order to reduce Single Occupant Vehicle (SOV) commutes through the implementation of *Commuter Choice* and *Commuter Benefits* programs. Certain of these programs would be applicable to both the public and private sectors. Others would be specific to one or the other.

[**Note:** The programs and actions recommended under this policy complement the programs and actions recommended under TLU-2: Transportation System Management, TLU-4: Improve Development Patterns, and TLU-5: Transit & Bike-Pedestrian.]

Policy Design

Goals: Enable all employers in the state with over 150 employees to provide options for employees such as transit contracts, pre- telecommuting in order to reduce SOV commutes and thereby reduce GHG emissions.

The *Commuter Benefits* programs provide employees with alternative transportation options and incentives under programs such as:

- Employers contracting with transit agencies to provide service directly to employment centers.
- Carpools.
- Providing pre-tax transit fare programs.
- Providing parking cash-out programs.
- Providing guaranteed ride-home service.

Under the *Commuter Benefits* options listed above, the total amount of commute trip-making by employees would not be reduced. Rather, the trip-making would be consolidated onto fewer vehicles and thereby decrease in total vehicle miles of travel.

The *Commuter Choice* programs, on the other hand, are designed to reduce total trip-making by substituting telecommuting for employee trip-making to and from a place of employment. The telecommuting option includes the development and use of neighborhood telecommuting centers that offer office-type services in locations close to commuters' residences. As an incentive to develop and provide such services, a tax credit can be offered to companies. Government spending to encourage commuter choice can stimulate a large private-sector match

Timing: The timing for creating and implementing the above listed programs will vary because many will require the enactment of legislation and the promulgation of regulations.

Parties Involved:

- Governor’s Office, Cabinet Agencies, and all other state agencies.
- SC Legislature
- Counties and municipalities
- School districts
- Universities and colleges
- Mass transit agencies and providers
- Private sector employers
- Other

Implementation Mechanisms

Commuter Benefits Programs

1. Enact legislation to require that all private-sector employers over 50 employees offer *Commuter Benefits* programs.
2. Enact legislation to require that all colleges and universities offer *Commuter Benefits* programs.
3. Enact legislation to require that all state agencies, counties and municipalities offer *Commuter Benefits* programs.
4. Enact legislation to require that all school districts offer *Commuter Benefits* programs.
5. Enact legislation to require that all state agencies charge appropriate parking fees to cover the costs of constructing and maintaining parking lots and/or facilities for employees.
6. Enact legislation creating a state van pool program.

Commuter Choice Programs

1. State establishes a public/private partnership to develop and run telecommuting centers that offer office-type services in locations close to commuters’ residences.
2. State would establish best practices in Transportation Demand Management (TDM) and assist employers of over 500 employees in developing and implementing TDM plans.

Related Policies/Programs in Place

- IRS Section 132(f) of the Internal Revenue Code
- EPA – Best Workplaces for Commuterssm Program
- SmartRide Program (Camden/Lugoff to Columbia) (Newberry/Little Mountain/Chapin to Columbia)
- Charleston Park and Ride
- City of Rock Hill Park and Ride

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-10	Commuter Choice	TBD	TBD	TBD	TBD	TBD

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-11 Explore Available Resources for Funding Road Maintenance and Mass Transportation

Policy Description

Increasing the state tax on conventional fuels can reduce fuel consumption and travel by encouraging travelers to use more fuel-efficient vehicles, carpool, use alternative fuels, ride public transit, combine trips, walk or bicycle for short trips, and eliminate unnecessary vehicle travel. In addition, revenues can be used to fund transit and other transportation alternatives within a corridor or region, to provide tax credits to encourage consumers to purchase more fuel-efficient vehicles, as well as to improve maintenance conditions of the highway system.

Policy Design

Goals:

Four goals are addressed by this policy:

- Reduce fuel consumption by shifting drivers to more energy efficient vehicles and more energy efficient travel modes;
- Improve availability of mass transit by making more funding available to cover operating costs of high-quality transit services;
- Reduce peak period traffic congestion – which also reduces energy consumption -- by shifting travel to modes that consume less highway capacity per user.
- Provide adequate funding for timely highway maintenance, which avoids the excess energy and material inputs required to reconstruct roads that are allowed to deteriorate to the point that simple repaving will not correct maintenance deficiencies.
- **Timing:** [TBD, as needed on TWG approval]
- **Parties Involved:** Elected officials at all levels, but primarily state legislature; SCDOT Division of Mass Transit; local transit operators
- **Other:**
The gas tax proposed is 5.4 cents per gallon for maintenance expenses and 1.75 cents for transit.

The following is an estimate of the current fuel tax rates and uses in effect in South Carolina:

Fuel Tax Rates (cents/gallon)			Uses of SC Fuel Tax		
	Gasoline	Diesel			
Federal	18.40	24.40	"C" Funds to Counties	2.66	cents
SC	16.75	16.75	Transit	0.25	cents
Total	35.15	41.15	Admin Costs for Rev Collection	0.75	cents
			Balance to SCDOT?	13.09	cents
			Total	16.75	cents/gallon
			Estimated revenue to SCDOT annually	418.88	million

Implementation Mechanisms

While politically charged, if approved by elected governing officials gasoline tax increases can be implemented easily and require little or no additional overhead expense to collect.

To implement the transit elements of this policy, SCDOT and local transit officials would need to examine and, if necessary, adjust the existing formula for allocating the ¼ cent of the state gasoline tax currently dedicated to transit. Local transit providers would be required to develop implementation plans for new services, and to order necessary equipment and vehicles. A good performance monitoring system should be established to ensure transit services are effective and operate efficiently.

To help reduce the impact on drivers, could be paired with a fuel efficient vehicle tax credits, (see discussion in TLU 3).

A linkage between energy use and timely highway maintenance may be difficult to quantify, but appears clearly to exist. Currently, inadequate funding for highway maintenance is leading to accelerated deterioration of the state’s highway infrastructure. Repaving (or “resurfacing”) is a routine maintenance activity, analogous to re-roofing a house. If the maintenance is deferred for too long, the underlying structure is damaged. In a house, this may mean replacing sheathing and rafters in addition to shingles. On a road, deferred maintenance results in major repairs to or complete reconstruction of the base layers of the road. Far more materials, transportation energy, and construction energy are required as a result. To implement a program that improved highway maintenance as a GHG reduction strategy would require some assurance that the additional funds would produce a net increase in maintenance funding, and not a shift of existing funding to other transportation programs.

Related Policies/Programs in Place

TBD – [as needed and approved by the TWGs]

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-11	Explore Available Resources for Funding Road Maintenance and Mass Transportation	0.06	0.34	1.80	TBD	TBD

• **Data Sources:**

- National fuel price forecasts from the Energy Information Administration’s Annual Energy Outlook 2006.
- Current fuel prices in South Carolina from ???

• **Quantification Methods:**

- A wide body of research examines consumers’ responses to higher fuel prices. Elasticities measure the decrease in VMT induced by an increase in fuel price. The work of Ken Small is regarded as particularly authoritative on this topic. Small provides separate elasticity values for short and long term responses to increased fuel prices.³ For each 1% increase in fuel price, VMT falls by 0.09% in the short term. In the long term, a 1% increase in fuel price induces a 0.43% decrease in VMT
 - Short term elasticity: -0.09
 - Long term elasticity: -0.43
- In the short term, consumers respond to fuel price increases by reducing or shortening unnecessary vehicle trips. In the long term, consumers respond to higher fuel prices by purchasing more fuel efficient vehicles, living closer to work, switching to alternate modes, etc.
- We forecast gasoline prices in South Carolina using the EIA’s national forecast and the current differential between national average prices and fuel prices in South Carolina. The calculated differential is based on pre-tax prices. On average the pre-tax price for a gallon of gasoline was 8.4% lower than the national average price in 2005 and 2006.
- We estimate the consumer response (elasticity) to the fuel price increase of 7.15 cents per gallon in each year based on a transition from short term responses to long term

³ Small, Kenneth A. and Van Dender, Kurt. Fuel Efficiency and Motor Vehicle Travel: The Declining Rebound Effect. July 17, 2006.

responses. GHG emission reductions are estimated based on projected VMT reductions due to higher fuel prices.

- **Key Assumptions: Long term consumer responses begin after 5 years, in 2013. Full long term effects are realized by 2020.**

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-12. Low-GHG Fuel Standard

Policy Description

This option seeks to reduce GHG emissions by decreasing the carbon intensity of all passenger vehicle fuels sold in the state. To accomplish this end, S.C. should observe the California plan to reduce GHG fuel emissions as it is put into practice and note the real world successes and failures of that template. A low GHG fuel standard in S.C. must take into consideration the state's dependence upon Gulf Coast refineries and upon existing transportation system via two major pipelines originating in the Gulf and terminating in the New York harbor. Incentivizing the production, development and marketing of low GHG fuels should continue and will promote its availability and use.

There is also a need to acknowledge regional assets in the development of specific fuels and use the state's resources to stimulate technological innovation to further develop these fuels.

Policy Design

Goals:

To reduce carbon intensity of South Carolina's on-road vehicle fuels by at least 10% by 2020.

- **Timing:** [TBD, as needed on TWG approval]
- **Parties Involved:** [TBD, as needed on TWG approval]
- **Other:** It may not be possible to meet the ambitious goal as laid out in CA's Low GHG Fuel Standard because their standard will be implemented and measured in CA on a lifecycle basis in order to include all emissions from fuel production to consumption. There are key differences between the lifecycle of fuels in CA and SC. In particular,
 1. CA has a number of refineries whereas SC depends on refineries along the gulf state, and
 2. CA has a pipeline system that is internal whereas SC's pipeline links SC to the gulf states.

Implementation Mechanisms

Identify potential low GHG fuels that are available in this region of the country, such as ethanol from cellulosic sources, biodiesel from soy beans, wind, and solar. The state needs to provide incentives for the further development of these fuel sources to make them available and sustainable. The state should continue its financial commitment to the development of hydrogen in fuel cell technology to hasten its practical use as a transportation fuel.

Related Policies/Programs in Place

TBD – [as needed and approved by the TWGs]

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-12	Low GHG Fuel Standard	0.35	3.57	17.07	TBD	TBD

- **Data Sources:** On road GHG emissions from the SC Inventory and Projections
- **Quantification Methods:** The result of the 10% reduction in carbon intensity is based upon the current carbon intensity for vehicle fuels in South Carolina and the forecast levels of fuel consumption for the horizon year. A ramp-up period is estimated so that the 10% goal would be reached at the horizon year, 2020.
- **Key Assumptions:**
- Program applies to both heavy duty and light duty vehicles.
- Reductions in fuel carbon intensity begin in 2012.

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-13. Commercial Vehicle Technology Improvements

Proposed to be combined with TLU-7

This option has been proposed for combination with TLU-7.

Policy Description

Over the past several years, and particularly since diesel fuel prices have increased exponentially, truck owners and operators have accelerated their use of fuel savings techniques, devices and technology. They have also have every reason to shut off their engines when it is practical and economical to do so.

Truck fuel efficiency overall can be improved using a variety of equipment modifications as well as driver training. Government agencies can promote truck fuel efficiency improvements with incentives and outreach.

The private sector, along with trade groups and vendors offer training and education as to technologies currently available and under development. Manufacturers and vendors are constantly marketing their products, some of which work, others either don't or haven't been subject to adequate testing.

Policy Design

1. **Truck tractors and trailers can be bought, or retrofitted, with aerodynamic devices.**
2. **Wide-based ("super-single) tires in some applications can prove to save fuel.**
3. **The makers of some lubricants claim they produce savings.**
4. **Owner operators and small fleet owners would benefit from training programs.**
5. **Commercial vehicle size and weight increases could improve the efficiency of freight movement and increase its productivity, while mitigating the effects of growing freight transportation demands.**

Goals: [CCS drafts based on inputs from volunteers for straw proposals and then moves proposed text to the full TWG for review/revision, then on to the CECAC at the next meeting].

- **Timing:** [TBD, as needed on TWG approval]
- **Parties Involved:** [TBD, as needed on TWG approval]
- **Other:** [As needed]

Implementation Mechanisms

1-A. Wind shields and skirting can be applied to reduce wind resistance and improve fuel economy. The manufacturers and vendors of these products actively market them. A cost-benefit

analysis would have to be used to determine if such equipment should be placed on older equipment, or if they make sense for a particular operation.

1-B. New trucks should be and most are equipped with such devices if it makes sense in a particular operation.

1-C. New and Used truck dealers could be approached to promote the use of these devices with their customers.

2-A. Super-Single/wide-based tires are proving to be fuel efficient in many applications. The federal tax on tires has been changed to make them more attractive. Manufacturers are actively marketing these products.

3-A. The manufacturers of some truck engine and component lubricants claim their products can save fuel. Studies could be conducted and the results could be distributed. OEM warranties on engines and components must be considered. The makers of such products are promoting the benefits in the marketplace.

4-A. Owner operators and small fleet owners would benefit from government training programs, outreach and materials designed to educate them and their drivers on fuel savings to be achieved through various driver-related strategies. The private sector, particularly vendors and trade associations, provides some, but the government could offer more help in this regard.

4-B. Equipment and technology-related training, materials and outreach strategies could help these small businesses.

5-A. Increasing the sizes and weights allowed for commercial vehicles would help mitigate the impact these freight hauling vehicles have on traffic congestion, allowing fewer vehicles to haul the same amount of cargo. These more productive vehicles would burn less fuel and emit fewer pollutants, while hauling more cargo, thereby reducing the number of trucks required to move the same amount of goods.

5-B. Increase truck weights to 97,000 pounds GVW and allow longer combination units (long doubles and triples units) to operate.

HERE, WE WOULD SUGGEST THAT THESE INITIATIVES AND OTHER GRANTS, TAX INCENTIVES AND OTHER MEASURES BE CONSIDERED/INCLUDED HERE AND/OR IN TLU-3 & 7.

COMBINING FUEL SAVINGS AND EMISSION REDUCTION PROPOSALS SHOULD BE CONSIDERED.

Related Policies/Programs in Place

TBD – [as needed and approved by the TWGs]

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

	Policy	Reductions (MMtCO ₂ e)			NPV (2008–2020) (\$ millions)	Cost-Effective-ness \$/tCO ₂
		2012	2020	Cumulative Reductions (2008–2020)		
TLU-13	Commercial Vehicle Technology Improvements	Quantified as part of TLU-7			TBD	TBD

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

TLU-14. Rail

Policy Description

TBD

Policy Design

Goals: [CCS drafts based on inputs from volunteers for straw proposals and then moves proposed text to the full TWG for review/revision, then on to the CECAC at the next meeting].

- **Timing:** [TBD, as needed on TWG approval]
- **Parties Involved:** [TBD, as needed on TWG approval]
- **Other:** [As needed]

Implementation Mechanisms

TBD – [CCS drafts based on TWG inputs; this can be developed as they go along, and can start early or late as they prefer; the level of detail can vary on TWG approval]

Related Policies/Programs in Place

TBD – [as needed and approved by the TWGs]

Types(s) of GHG Reductions

TBD – [CCS to list GHG reductions with input / approval from TWG]

Estimated GHG Reductions and Net Costs or Cost Savings

TBD – [CCS should provide a worksheet and other reference material as needed for transparency]

- **Data Sources:** [TBD by CCS on TWG approval]
- **Quantification Methods:** [e.g. Full life-cycle analysis with supply/demand equilibrium adjustments on TWG approval]
- **Key Assumptions:** [TBD, as needed on TWG approval]

Key Uncertainties

TBD – [as needed and approved by the TWGs]

Additional Benefits and Costs

TBD – [as needed and approved by the TWGs]

Feasibility Issues

TBD – [as needed and approved by the TWGs]

Status of Group Approval

Pending – [until CECAC moves to final agreement at Meeting #5 or #6]

Level of Group Support

TBD – [blank until CECAC Meeting #5]

Barriers to Consensus

TBD – [blank until final vote by the CECAC]

Appendix A: Federal Transit Aids **[Appendix to TLU 5: Transit & Bike-Pedestrian]**

SECTION 5303: Metropolitan Planning Program

Eligible Recipients: Metropolitan Planning Organizations (MPOs).

Guidelines: This program provides for transportation planning activities within the urbanized areas of the State. An allocation is distributed to each state based on the state's urbanized area population as defined by the U.S. Census Bureau. Each state, in cooperation with the MPOs, must develop an allocation formula. This formula must be approved by FTA and ensure to the maximum extent possible that no MPO is allocated less than the base amount received by administrative formula under the FY 1991 allocation. Beginning FY 2008, this program will be administered by the SCDOT Planning Office under the consolidated planning grant.

Allocation of Funding: Funds are allocated by formula. The formula is similar to the formula used to distribute the Federal Highway Administration planning funds.

Match: The federal share is 80%; the local share is 20%. The State does not provide match for this program; therefore, MPOs must provide the entire 20% local match.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5304: Statewide Planning and Research Program

Eligible recipients: Public bodies and private non-profit organizations.

Guidelines: This program supports statewide public transit projects. Projects may include statewide transit planning, management training, service development, workshops, and cooperative research. In addition, the State may use a portion of these funds to supplement metropolitan planning funds allocated by the State to its urbanized areas, as appropriate.

Allocation of Funding: Federal funds are allocated by formula.

Match: The federal share is 80% and requires an additional 20% match.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5307: Urbanized Area Formula Program

Eligible Recipients: The Governor, or the Governor's designee, is the designated recipient for urbanized areas with populations between 50,000 and 200,000. Funds are made available to designated recipients with legal authority to receive and dispense federal funds; i.e. local officials and publicly owned operators representing urbanized areas with populations greater than 50,000. Generally, a transportation management area is an urbanized area with populations of 200,000 and greater.

Category 1: Large Urbanized Area (Population greater than 200,000). These areas include Charleston, Columbia, and Greenville. In this category, urbanized areas deal directly with the FTA.

Category 2: Small Urbanized Areas (Population 50,000 - 200,000). These areas include Anderson, Florence, Myrtle Beach, Rock Hill, Spartanburg, and Sumter. In this category, funds are apportioned to the Governor of each state. This responsibility has been delegated to SCDOT.

Guidelines: Federal funding is apportioned to the State on the basis of legislative formulas. For areas of 50,000 - 199,999 in population, the formula is based on population and population density. For areas with populations of 200,000 and greater, the formula is based on a combination of bus revenue vehicle miles, bus passenger miles, fixed guideway revenue vehicle miles, and fixed guideway route miles, as well as population and population density. These funds are used with transit capital or operating expenses and planning.

Match: The federal share should not exceed 80% of the new project cost for capital or planning. The federal share may be 90% for the cost of vehicle-related equipment attributed to compliance with the ADA and the Clean Air Act. The federal share may also be 90% for projects or portions of projects related to bicycles. The federal share may not exceed 50% of the new project cost of operating assistance. Large urbanized areas are exempted from receiving operating assistance.

State Share:

Large Urbanized Area—current formula provides up to 25% of the available State Mass Transit Funds.

Small Urbanized Area—current formula provides 19% of the available State Mass Transit Funds.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5309: Discretionary Funds)

Eligible Recipients: SCDOT and public transportation providers.

Guidelines: Funding for this program must be used for mass transit capital projects only, such as buses, computer equipment, rail projects, transit facility projects, etc.

Allocation of Funding: Congress controls earmark funds to states for specific projects through appropriation. These funds are dispersed based on need and requests.

Match: The maximum federal share is 80%; the local share is at least 20%. (New start projects can have a different ratio, receiving greater local shares.) The state may provide a 10% match, if available; otherwise, the agency must provide the entire 20% match.

SECTION 5310: Ederly Individuals and Individuals with Disabilities Program

Eligible Recipients: Private, non-profit organizations, and public bodies that certify to the governor that no non-profit corporations or associations are readily available in an area to provide the service (i.e., Councils on Aging, Disabilities and Special Needs Boards, local and public agencies).

Guidelines: These funds are used to assist private non-profit agencies, local and public agencies in meeting the transportation needs of the elderly individuals and individuals with disabilities. Most of the funds are used for purchase of service contracts from other providers and/or purchase of vehicles. Funds may also be used for mobility management. This program allows up to 10% of the apportionment for state administration.

Allocation of Funding: Federal funds are allocated by formula that considers the number of elderly individuals and individuals with disabilities in each state.

Match: The federal share is 80%; local share is 20%. The State does not provide match for this program; therefore, human service agencies must provide the entire 20% local match.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5311: Rural and Small Urban Areas

Eligible Recipients: Local governments, non-profit organizations (including Indian tribes and groups), and public transit operators in areas with populations less than 50,000.

Guidelines: Funding for this program is made available through formula grants to states. Funds may be distributed to public, private for-profit, or tribal organizations and used for

administration, operations, or capital. Additional funding is made available through the Section 5311 Program grant to support the state’s rural training and technical assistance programs. These funds are distributed to public, private for-profit or tribal organizations under the RTAP guidelines.

Allocation of Funding: Funding is appropriated by a statutory formula that is based on the latest U.S. Census Bureau figures of areas with populations less than 50,000. The amount that the state may use for state administration, planning, and technical assistance activities is limited to 15% of the annual apportionment. States must spend 15% of the apportionment to support rural intercity bus service, unless its governor certifies that the intercity bus needs of the state are adequately met. At the state level, a formula is derived to further distribute the funds to rural transit providers.

Match: The maximum federal share for capital and project administration is 80% (except for equipment designed to meet the requirements of the ADA, the Clean Air Act, or bicycle access projects, which may be funded at up to 90%). The maximum federal share for operating assistance is 50% of the net operating costs. The local share is 50%, which comes from program income, county/city allocation, and contract revenue. State funds are made available based on the rural transit funding formula.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5311 (b)(3): Rural Transit Assistance Program (RTAP)

Eligible recipients: States, local governments, and local transit operators.

Guidelines: This program provides funding to assist in the development and implementation of training and technical assistance and other support services tailored to meet the specific needs of transit operators in non-urbanized areas.

Allocation of Funding: Used to support statewide initiatives and training efforts of transit operators.

Match: There is no local match required under this program.

Funding Availability: Funds are available the year appropriated, plus two years, for a total of three years of available funding.

SECTION 5316: Job Access and Reverse Commute (JARC) Program

Eligible Recipients: Private non-profit organizations, state or local governmental authorities, and public and private operators of public transportation services.

Guidelines: Reverse Commute grants are designated to develop transit services to transport workers to suburban job sites. Eligible activities for Job Access grants include capital and operating costs of equipment, facilities, and associated capital maintenance items related to providing access to jobs. Also included are the costs of promoting the use of transit by workers with nontraditional work schedules, promoting the use of transit vouchers, and promoting the use of employer-provided transportation, including the transit benefits. For Reverse Commute grants, the following activities are eligible: operating costs, capital costs, and other costs associated with reverse commute by bus, train, carpool, van, mobility management, or other transit service.

Allocation of Funding: Through FTA formula. SCDOT, in partnership with local agencies, is responsible for a competitive selection process when funding this program.

Match: 80% federal for capital and 50% for operating. Recipients can use up to 10% for administration at a 100% federal share.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.

SECTION 5317: New Freedom Program

Eligible Recipients: Private non-profit organizations, state or local governmental authorities, and public and private operators of public transportation services.

Guidelines: The designated recipients are responsible for conducting the competitive selection process. Eligible activities encourage services and facility improvements to address the transportation needs of individuals with disabilities that go beyond those required by the ADA. The following activities are eligible: operating costs, capital costs and mobility management costs.

Allocation of Funding: Through FTA formula. SCDOT, in partnership with local agencies, is responsible for a competitive selection process when funding this program.

Match: For capital, the federal share is 80% and the local share is 20%; for operating, the federal share is 50% and local share is 50%. The State can use up to 10% for state administration at a 100% federal share with no match.

Funding Availability: Funds are available the year appropriated, plus three years, for a total of four years of available funding.