



Transportation and Land Use GHG Reduction Policy Options

Prepared for Technical Working Group (TWG) Call #3, June 8, 2006

Potential Emission Reductions <u>1/</u>	Potential Cost or Cost Savings <u>1/ 2/</u>
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of current NC emissions)	High (H): \$50 per Metric Ton CO ₂ e (MTCO ₂ e) or above
Medium (M): From 0.1 to 1 MMT CO ₂ e per year by 2020	Medium (M): \$5-50/MTCO ₂ e
Low (L): Less than 0.1 MMT CO ₂ e per year by 2020, or 1 MMT CO ₂ e by 2050	Low (L): Less than \$5/MTCO ₂ e
Uncertain (U): Not able to estimate at this time	Uncertain (U): Not able to estimate at this time
<u>1/</u> Several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.	
<u>2/</u> Costs are denoted by a positive number. Cost savings (i.e., “negative costs”) are denoted by a negative number.	

Definition of “Priorities for Analysis”:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

* Options marked with an asterisk (*) indicate options that are at least partially “base case” policies, i.e., that have been considered or undertaken at some level in North Carolina.

** Options marked with a double asterisk (**) indicate options that are included as recommendations in the September 1, 2005 NC DENR Report under the Clean Smokestacks Act of 2002.

Total number of options in this catalog: 72. Goal ~10 to recommend to CAPAG.

Option No.		GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
TLU	1.	PASSENGER VEHICLE GHG EMISSION RATES					
TLU	1.1	Vehicle Technology					
TLU	1.1.1	Tailpipe GHG Emission Standards **		H	L	Opinions vary sharply on cost. Legal challenge pending.	Assume California GHG standards (Pavley).
TLU	1.1.2	ZEV/LEV-2 Implementation **		L	L/M	Primary benefit is CAA emissions reductions.	
TLU	1.1.3	R&D on Low-GHG Vehicle Technology (e.g., fuel cell, low-weight vehicles, alt vehicles like Segway)		L	U	Best coupled with federal dollars	
TLU	1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)		L	Savings/L	Most available now	
TLU	1.2	Vehicle Operation					
TLU	1.2.1	Enforce Speed Limits		L/M	L		

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TLU	1.2.2	Vehicle Maintenance, Driver Training		L/M	U		
TLU	1.2.3	Transportation System Management and Design, including ITS; limiting loops and bypasses; improving roadway planning		M	L		
TLU	1.2.4	Roadway materials use; concrete versus asphalt					
TLU	1.3	Incentives & Disincentives					
TLU	1.3.1	Procurement of Efficient Fleet Vehicles **		L	L/M		
TLU	1.3.2	Feebates (state-specific or regional) **		L/M	Split; should be revenue neutral	CO2 benefits overlap substantially with Pavley	
TLU	1.3.3	CO ₂ -based registration fees		L/M		“; could accelerate turnover.	
TLU	1.3.4	Tax Credits for Efficient Vehicles **		L			
TLU	1.3.5	Vehicle Scrappage		L	L/M		
TLU	2.	LAND USE AND LOCATION EFFICIENCY					
TLU	2.1	General					
TLU	2.1.1	Infill, Brownfield Re-development		H	L		
TLU	2.1.2	Transit-Oriented Development *		H	L/M		
TLU	2.1.3	Smart Growth Planning, Modeling, Tools **		H	L		
TLU	2.1.4	Targeted Open Space Protection		M	M		
TLU	3.	INCREASING LOW-GHG TRAVEL OPTIONS					

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TLU	3.1	Increase Transportation Funding for Efficient Modes					
TLU	3.1.1	Maximize co-benefits from CMAQ funds in nonattainment areas		L	L		
TLU	3.1.2	Improve Transit Service (frequency, convenience, quality) **		M	M		
TLU	3.1.3	Transit Marketing and Promotion *		M/H	L		
TLU	3.1.4	Bike and Pedestrian Infrastructure		L			
TLU	3.1.5	Expand Transit Infrastructure (rail, bus, BRT) *		M	M/H		
TLU	3.1.6	HOV lanes		L	H		
TLU	3.1.7	"Fix-it-First"		L/M	L		
TLU	3.1.8	Transit Prioritization (signal prioritization, HOV lanes)		L	L/M		
TLU	3.1.9	Telecommute and Live-Near-Your-Work		L	L		
TLU	3.1.10	Car sharing		L	L	Commercially provided at a profit; needs mostly just public access (parking)	
TLU	3.1.11	E-Commerce		L			
TLU	3.2	Incentives & Disincentives					
TLU	3.2.1	Commuter Choice/Parking Cash Out		H	L		
TLU	3.2.2	VMT fee		H			
TLU	3.2.3	New investment / funding strategies		L			
TLU	3.2.4	Pay As You Drive Insurance		H	L		

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TLU	3.2.5	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)		M			
TLU	3.2.6	Location-Efficient Mortgages		L	L	Available now; need additional promo	
TLU	3.2.7	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)		L			
TLU	3.2.8	Parking Pricing or Supply Restrictions		H			
TLU	3.2.9	Transit Repositioning		M			Combine with other transit, esp. 3.1.2-3?
TLU	3.2.10	Transit Pricing Incentives *		M	L		
TLU	3.2.11	VMT/GHG Offset Requirements for Large Developments		L/M	L		
TLU	3.2.12	Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes, tolls)		L	L		
TLU	3.3	Fuel Measures					
TLU	3.3.1	Low-GHG Fuel Standard (e.g., renewable)		L-H		Emissions benefits will vary widely with renewable fuel type.	Need to ensure that emissions from alt-fuel production do not exceed benefits from use; may need additional R&D.
TLU	3.3.2	Renewable Fuels Motor Fuels Tax Exemption / credit				“	
TLU	3.3.3	Low-GHG Fuel for State and commercial Fleets (e.g., CNG, biodiesel) *		L		“. Some CNG bus expansion in the baseline in transit, schools, airports	Biodiesel has various issues with both performance and fuel economy.
TLU	3.3.4	Biofuel expansion (biodiesel, CNG, LPG, cellulosic ethanol)		L		“	

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TLU	3.3.5	Alternative Fuel Infrastructure Development *				"	
TLU	3.3.6	Purchase CO2 offsets for fuel use / Public facilities fee for fuel		L/M	L		
TLU	4.	FREIGHT					
TLU	4.1	Vehicle Technology					
TLU	4.1.1	Vehicle Technology Improvements (e.g., aerodynamics)		L		New EPA emission standards for heavy-duty engines take effect in 2007	
TLU	4.1.2	R&D on Low-GHG Vehicle Technology		L			
TLU	4.1.3	Low-sulfur diesel		L		New EPA fuel standards for low-sulfur diesel take effect in 2006.	
TLU	4.1.4	Black carbon control technologies (e.g., use of particulate traps, other complementary technologies) **		U		Large co-benefits in PM reduction.	
TLU	4.2	Vehicle Operation					
TLU	4.2.1	Freight Logistics Improvements/GIS		L			
TLU	4.2.2	Enforce Speed Limits		L-M			
TLU	4.2.3	Improve Traffic Flow		L			
TLU	4.2.4	Increased Size & Weight of Trucks		L	L	Emissions benefits offset by mode shift from rail.	
TLU	4.2.5	Increase the Number of Rest Areas		L			
TLU	4.2.6	Pre-clearance at Scale Houses		L			
TLU	4.2.7	Truck Stop Electrification **		M			

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TLU	4.2.8	Enforce Anti-Idling ** (+ passenger idling, school bus idling)		M			
TLU	4.3	Increasing Low-GHG Travel Options					
TLU	4.3.1	Intermodal Freight Initiatives **		L-M			
TLU	4.3.2	Feeder Barge Container Service		L			
TLU	4.4	Incentives & Disincentives					
TLU	4.4.1	Procurement of Efficient Fleet Vehicles (public, private or other)					
TLU	4.4.2	Incentives to Retire or Improve Older Less Efficient Vehicles		L			
TLU	4.4.3	Maintenance and Driver Training					
TLU	4.4.4	Increased Truck Tolls or Highway User Fees		L unless large enough to mode shift			
TLU	4.5	Intercity Travel: Aviation, High Speed Rail, Bus					
TLU	4.5.1	High-speed Rail					
TLU	4.5.2	Integrated Aviation, Rail, Bus Networks		M			
TLU	4.5.3	Aircraft emissions		L			
TLU	4.5.4	Airport Ground Equipment		L			
TLU	4.6	Off-Road Vehicles (construction equipment, out-board motors, ATVs, etc)					

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TLU	4.6.1	Incentives for Purchase of Efficient Vehicles/Equipment		L			
TLU	4.6.2	Improved Operations, Operator Training		L			
TLU	4.6.3	Maintenance Improvements		L			
TLU	4.6.4	Increased Use of Alternative Fuels or Low Sulfur Diesel		L			