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Catalog of State Actions
Transportation Land Use (TLU) Working Group

Draft Prepared for Climate Change Advisory Group (CCAG)
Meeting #2 – June 14, 2007

A catalog of state-level, GHG-reducing actions and policy options prepared by the Center for Climate Strategies (CCS), Minnesota Department of Commerce (DOC), and Minnesota Pollution Control Agency (PCA) based on actions undertaken or considered by Minnesota and other states, including regional, state, local and private actions.

Important Note: The GHG Reduction Policy Options below are numbered solely for convenience in referencing them. Their numbers do NOT reflect a ranking or prioritization of the policy options.

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	**LIGHT DUTY VEHICLE GHG EMISSION RATES**					
TLU-1.1	**VEHICLE TECHNOLOGY**					
1.1.1	Tailpipe GHG Emission Standards					
1.1.2	ZEV/LEV-2 Implementation					
1.1.3	R&D on Low-GHG Vehicle Technology (e.g., fuel cell)					University of Minnesota and Council (Transit) research on auxiliary power options to minimize idling. PHEV Car modification for???
1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)					
TLU-1.2	**VEHICLE OPERATION**					
1.2.1	Enforce Speed Limits					Stricter enforcement of traffic ordinances is a strategy in the adopted regional Transportation Control Plan for controlling CO emissions.
1.2.2	Vehicle Maintenance, Driver Training					Anti-Idle campaign?

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1.2.3	Transportation System Management					With CMAQ funds, Minneapolis has implemented computerized traffic signals for better traffic flow. The 2007 CMAQ solicitation contains a funding program for TSM. Freeway on-ramp metering program.
TLU-1.3	**INCENTIVES & DISINCENTIVES**					
1.3.1	Procurement of Efficient Fleet Vehicles					
1.3.2	Feebates (state-specific or regional)					
1.3.3	CO_2-based registration fees					
1.3.4	Tax Credits for Efficient Vehicles					
1.3.5	Vehicle Scrappage					

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TLU-2	**LAND USE AND LOCATION EFFICIENCY**					
TLU-2.1	**GENERAL**					
2.1.1	Infill, Brownfield Re-development					Metropolitan Livable Communities Program Tax Base Revitalization Account grants have funded projects throughout the metropolitan area to clean up polluted land and buildings for redevelopment, creating new jobs and affordable housing, and directing growth to central cities and older suburbs where costly infrastructure is already in place.

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2.1.2	Transit-Oriented Development				Encourage higher density development along transit corridors; online *Transit Oriented Development Handbook* provided as a resource for local communities.	Metropolitan Livable Communities Program provides Livable Communities Demonstration Account grants to metropolitan area communities for projects that result in connected development patterns that link housing, jobs and services, and use regional infrastructure efficiently. Many projects served by bus and LRT infrastructure have been funded. Minnesota Housing has a priority for housing development located near transportation, including regional and interregional transportation corridors and transit-ways.

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2.1.3	Smart Growth Planning, Modeling, Tools				Plan for the orderly and economical development of the metropolitan region and manage growth in a way that ensures efficient delivery of regional services. Under state law all metropolitan area communities must prepare local comprehensive plans which are consistent with regional plans.	The MC's *2030 Regional Development Framework* and the policy plans that implement it are intended to help accommodate the region's growth in an orderly, efficient manner and guide the expansion of four regional systems: transportation; aviation; water resources (inc. wastewater collection and treatment) and regional parks and open space. Minnesota Housing has a priority for housing development in proximity to existing development and services, protecting environmental resources and promoting compact development.

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2.1.4	Targeted Open Space Protection				*Development Framework* policy to "work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources." *Natural Resource Digital Atlas* as a tool to help local communities.	Some counties have sold bonds to protect open spaces. MC plans to increase regional park and open space system from 53,000 acres to 80,000 acres. Minnesota Housing supports new development that is not located near wetlands, steep slopes, critical habitat, or on prime farmland or park land.

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2.1.5	Priority Areas designated planned growth areas (to receive priority in all forms of state funding programs)				Priority Areas – The State of Minnesota should designate planned growth areas that will receive priority in all forms of state funding programs. In order to qualify, the areas must have land use plans and regulations in effect that provide for certain levels of compact, mixed use forms of development, adequate transit choices, and natural area protection.	

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2.1.6	Comprehensive Planning to include emissions inventory				In preparing comprehensive plans, communities should be required to inventory their existing greenhouse gas emissions, account for additions or reductions in greenhouse gas emissions resulting from the changes proposed in the plans, and identify strategies to offset additional emissions and/or to meet emission reduction goals.	

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2.1.7	Environmental Review				In all levels of environmental review, the party charged with assessing the potential for substantial adverse environmental impacts should be required to inventory the changes to greenhouse gas emissions that will result from the project or plan and identify strategies that will be undertaken to offset all net new emissions or to help meet state or regional emission goals.	

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2.18	Meet State and Regional needs for Affordable Housing by increased density and location near transportation systems and jobs available to low and moderate income workers.		Climate Change Emission Reductions (Million Metric Tons CO2 Equivalent) Land Use and Trans-portation: California 2010: 5.5 2020: 18 Arizona 2010: 3.1 2020: 14.5	California estimates Smart Land Use and Intelligent Transporta-tion would minimize or reduce costs.* Arizona estimates that Trans-portation and Land Use would be cost neutral or reduce costs. **	New strategies for meeting affordable housing needs requires a balance between incentives and mandates that will need to be struck in cooperation with development and local government interests.	The CA and AZ examples are based on a Minnesota Housing Staff review of the Center for Climate Strategies Website; we will continue to analyze these and other efforts. Minnesota Housing works with Met Council to meet this goal. The NGA Policy Academy on Housing and Economic Development Identified the Issue of: Housing, Jobs, and Transportation Mismatch: • Housing affordability gap • Job growth concentration • Increased commutes*** • Strained infrastructure and resources • Emerging business climate unfavorable for housing and transportation • Health and environmental impacts

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* The California Climate Change Emission Reductions are estimates and determined for a broader land use and transportation category. Such strategies incorporate promoting jobs/housing proximity and transit oriented development; encouraging high density residential/commercial development along transit/rail corridor and implementing intelligent transportation systems. California estimates Smart Land Use and Intelligent Transportation "would minimize the need for major capital improvements and can provide a host of benefits including more livable communities, transportation energy efficiency, lower emissions from mobile sources, and a lower-cost provision of public services (e.g. water, sewer)." California Environmental Protection Agency, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March 2006 (pages 57-59). **The Arizona Green house Gases reductions are estimates and determined for a broader land use and transportation category. Arizona recommends a smart growth bundle of options to reduce green house gases emissions driven by land use practices and policies. The options include: infill, increased density and Brownfield development; transit oriented development; smart growth, and targeted open space protection. The Arizona policy recommendations "result not only in the significant emissions and cost savings, but offer a host of additional benefits as well," including: reduced local air pollution, more livable healthy communities and economic development and job growth from in-state bio-fuel production. Arizona Department of Environmental Quality, Arizona Climate Change Advisory Group, Climate Change Action Plan, Report to Governor Napolitano, August 2006 (pages 67-76). ***By 2020 vehicle miles traveled are forecasted by the EPA to grow by 30% if current growth trends continue. The annual costs of air pollution in the 19 county Twin Cities area were estimated at slightly less than $1000 per vehicle by the University of Minnesota's Center for Transportation Studies. If current development trends continue, Minnesotans for an Energy Efficient Economy (ME3) estimate that the increased environmental costs from more vehicle miles traveled will reach over $106 million annually. Metropolitan Council Directions Newsletter, "Region meets many benchmarks for growth, environment," November, 2006 and The Full Cost of Transportation in the Twin Cities Region, Transportation and Regional Growth Study, Center for Transportation Studies, University of Minnesota , August 2000.					

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TLU-2.2	**INCREASING LOW-GHG TRAVEL OPTIONS**					
2.2.1	Make full use of CMAQ funds				The MC has fully allocated all CMAQ funding since 1991.	The MC/TAB programmed $181 million in CMAQ funds for transit expansion projects and $53 million for transportation demand and system management since the beginning of the program, which are prioritized based on CO, NO_x and VOC reduction. The MC expects to program $52 million in CMAQ funding in the 2007 solicitation.
2.2.2	Improve Transit Service (frequency, convenience, quality)					Weak
2.2.3	Transit Marketing and Promotion					Weak

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2.2.4	Bike and Pedestrian Infrastructure				MC has fully allocated most Enhancement funds to bicycle/pedestrian infrastructure and has a stand-alone STP funding category for infrastructure for bicycle commuting.	MC/TAB programmed $95.6 million in Enhancement and STP funds since 1992. Transit for Livable Communities is implementing a $25 million federal pilot program for bicycling/walking. This year the MC expects to program $16 million in Enhancements funding and $92 million in STP funding, a portion of which will go toward bicycle commute infrastructure in the 2007 solicitation. MPCA – needs work

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2.2.5	Expand Transit Infrastructure (rail, bus, BRT)					MC has a goal of doubling transit ridership by 2030 and increasing it by 50% by 2020. Improvements in clued additions of LRT, commuter rail, BRT and increased regular bus route service to reach this goal. In 2006 Minnesota voters approved a constitutional amendment requiring dedication of motor vehicle sales tax funds to transit which will result in increased finding.

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2.2.6	HOV lanes					MC region has 2 HOV lanes (I-394 and I-35W). I-394 is a HOT lane which allows SOV's to use the HOV lane for a fee. MC and MNDOT are working on a HOT lane study; construction of I-35W/62 Crosstown commons section beginning this year. MOU between MC and MNDOT to consider additional HOT lanes in future highway improvements.
2.2.7	"Fix-it-First"					Regional highway plan in MC Transportation Policy Plan states that highway expansion investments are only considered after preservation and management investments have been funded.
2.2.8	Transit Prioritization (signal prioritization, HOV lanes)					Buses travel in HOV/HOT lanes on I-394 and I-35W. The region has 358.46 miles of bus shoulder lanes allowing busses to bypass congestion.

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2.2.9	Telecommute and Live-Near-Your-Work					HourCar
2.2.10	Car sharing					Neighborhood Energy Connection's (NEC) HourCar program; Zipcar at U of MN.
2.2.11	E-Commerce					
2.2.12	Road Standards (to reduce stop-and-start movements and to improve the multimodal use of rights-of-way)					
2.2.13	Surface Transportation Program (flex a portion of funding from highways to transit)					
2.2.14	Expand Transit Use (through provision of tax benefits to non-profits)					For-profit corporations are eligible for a 30% income tax credit for funds expended to subsidize transit fares for their employees through marketing plans such as the Metropolitan Council's Metropass Program.
TLU-2.3	**INCENTIVES & DISINCENTIVES**					
2.3.1	Commuter Choice/Parking Cash Out					

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2.3.2	VMT Tax					MNDOT currently studying this finance mechanism.
2.3.3	Pay As You Drive Insurance					
2.3.4	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)					
2.3.5	Location-Efficient Mortgages					
2.3.6	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)					I-394 is HOT lane. MOU between MC and MNDOT to consider additional HOT lanes in future highway improvements.
2.3.7	Parking Pricing or Supply Restrictions					MC studied these 5 years ago.
2.3.8	Transit Repositioning					
2.3.9	Transit Pricing Incentives					Metropass program is an employer-based transit incentive program.
2.3.10	VMT/GHG Offset Requirements for Large Developments					
2.3.11	Benefits for Low GHG Vehicles (preferential parking, use of HOV lanes)					

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TLU-2.4	**FUEL MEASURES**					
2.4.1	Low-GHG Fuel Standard (e.g., renewable)					2% Biodiesel and ULSD already mandated and being used.
2.4.2	Low-GHG Fuel for State Fleets (e.g., CNG, biodiesel)					2% Biodiesel and ULSD already mandated and being used.

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2.4.3	Biofuel expansion (biodiesel, CNG, LPG, cellulosic ethanol)					Metro Mobility uses the highest level of biofuel allowable by operating conditions and vehicle manufacturers. ▪ B5 used by Metro Transit ▪ Testing B20 ▪ Considering use of B10 by mid-2007 pending B20 test results. ▪ Looking for other engine technology that uses other types of renewable fuels. Formation of the NextGen Energy Board to determine how state can invest most efficiently to achieve energy independence - $90 million from 2010 – 2020

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2.4.4	Alternative Fuel Infrastructure Development					Grants are available to partially reimburse service station owners who install E85 pumps. Auto dealers are required to provide written notice that new flex fuel vehicles can run on E85. To create energy parity, the state fuel tax on E85 is 14.2 cents/gallon, versus E10 that is taxed at 20 cents/gallon.
TLU-3	**HEAVY DUTY VEHICLE GHG EMISSIONS RATES**					
TLU-3.1	**VEHICLE TECHNOLOGY**					

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3.1.1	Vehicle Technology Improvements (e.g., aerodynamics)					Metro Transit buses with Voith transmissions have been upgraded to utilize an auto neutral feature that disengages the transmission at stops to reduce fuel consumption. MPCA – small business loans EPA mandates for 2007 and newer engines already require Diesel Particulate Filters (DPF) and Exhaust Gas Recirculation (EGR) systems to remove both ozone creating gasses and particulate pollution. Super single tires are being used voluntarily by the industry to improve fuel economy. Truck bodies are becoming more aerodynamic to improve fuel economy. Engine idle shutdown after five minutes among other technologies are being voluntarily used to save fuel. MPCA and Smartway loan programs are high interest loans.

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3.1.2	R&D on Low-GHG Vehicle Technology					U of MN and Metro Transit studying auxiliary power options to minimize idling and power more auxiliary systems electrically. APU's and other anti-idling, GHG reducing equipment is already, voluntarily being used by the industry. MTA moved two bills designed to create incentives for trucking companies not financially able to purchase this technology with either a tax-credit program or a grant program similar to that used in Wisconsin. (HF's 1280 and 1447, Hortman)
3.1.3	Low-sulfur diesel (Fed)					Metro Transit using ULSF 15ppm sulfur content ULSD already mandated and being used by transportation industry

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3.1.4	Black carbon control technologies (e.g., use of particulate traps, other complementary technologies)					Metro Transit future bus purchases will utilize particulate filters. Green Fleet – diesel retrofit are aimed primarily at school busses, not private fleets. 2007 and newer heavy truck engines already mandate DPF's and EGR technology (these technologies decrease fuel economy)
TLU-3.2	**VEHICLE OPERATION**					
3.2.1	Freight Logistics Improvements/GIS					Truck companies Many in the trucking industry are already using logistics software to increase efficiency and profits Smartway members are required to try GPS/logistics equipment.
3.2.2	Enforce Speed Limits					
3.2.3	Improve Traffic Flow					
3.2.4	Increased Size and Weight of Trucks					
3.2.5	Increase the Number/Capacity of Rest Areas					

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3.2.6	Pre-clearance at Scale Houses				Up to ½ gallon of fuel is consumed at scale stops.	
3.2.7	Truck Stop Electrification					
3.2.8	Enforce Anti-Idling					
TLU-3.3	**INCREASING LOW-GHG TRAVEL OPTIONS**					
3.3.1	Intermodal Freight Initiatives					Private sector already taking advantage of intermodal freight options. Capacity will drive the ability of haulers to use intermodal options.
3.3.2	Feeder Barge Container Service					
TLU-3.4	**INCENTIVES & DISINCENTIVES**					
3.4.1	Procurement of Efficient Fleet Vehicles (public, private or other)					Metro Transit is in the process of increasing its fleet of 3 hybrid electric buses to 153 electric hybrids by 2011.

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3.4.2	Incentives to Retire or Improve Older Less Efficient Vehicles					Metro Transit schedules 40' and 60' bus replacements at 12 years to replace old buses/engines and emission technology while meeting FTA's minimum requirement for service life. MTA moved two bills designed to create incentives for trucking companies not financially able to purchase this technology with either a tax-credit program or a grant program similar to that used in Wisconsin. (HF's 1280 and 1447, Hortman)
3.4.3	Maintenance and Driver Training					Private sector already educating drivers and modifying maintenance in an effort to improve fuel economy and reduce emissions.
3.4.4	Increased Truck Tolls or Highway User Fees					
TLU-4	**INTERCITY TRAVEL: AVIATION, HIGH SPEED RAIL, BUS**					
4.1	High-speed Rail					

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4.2	Integrated Aviation, Rail, Bus Networks					
4.3	Aircraft emissions					
4.4	Airport Ground Equipment					
TLU-5	**OFF-ROAD VEHICLES (CONSTRUCTION EQUIPMENT, OUT-BOARD MOTORS, ATVS, ETC)**					
5.1	Incentives for Purchase of Efficient Vehicles/Equipment					
5.2	Improved Operations, Operator Training					
5.3	Maintenance Improvements					
5.4	Increased Use of Alternative Fuels or Low Sulfur Diesel					