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**Transportation and Land Use Technical Work Group
Summary List of Pending Priority Policy Options for Analysis
As of October 31, 2007**

	Policy Option	GHG Reductions (MMtCO ₂ e)			Net Present Value 2007–2025 (Million \$)	Cost-Effectiveness (\$/tCO ₂ e)	Status of Option
		2010	2025	Total 2007-2025			
TLU-1	Improved Land Use Planning and Development Strategies						Pending
TLU-2	Expand Transit, Bicycle, and Pedestrian Infrastructure						Pending
TLU-3	Low GHG Fuel Standard (Potential overlap with ES-2 and AFW-7)						Pending
TLU-4	Infrastructure Management						Pending
TLU-5	Climate-Friendly Transportation Pricing						Pending
TLU-6	Adopt CA Clean Car Standards						Pending
TLU-7	“Fix-it-First” Transportation Investment Policy and Practice						Pending
TLU-8	Update Road Standards – Now part of TLU- 4						Pending
TLU-9	Workplace Tools to Encourage Carpooling, Bicycling, and Transit Ridership						Pending
TLU-10	Congestion Pricing (or tolls) with targeted use of revenue towards travel alternatives – Now part of TLU-5						Pending
TLU-11	Truck Stop Electrification						Pending
TLU-12	Mobile Source Emissions Reduction						Pending
TLU-13	Reduce Maximum Speed Limits						Pending
	SECTOR TOTAL AFTER ADJUSTING FOR OVERLAPS						

	REDUCTIONS FROM RECENT ACTIONS						
	SECTOR TOTAL PLUS RECENT ACTIONS						

Alternative TLU Analysis Framework

Transportation carbon emissions = Miles driven x carbon per mile. Carbon per mile = vehicle efficiency x carbon per unit of fuel. So, reduce green house gas emissions by:

- Reducing the number of miles driven
 - TLU-1 Land Use Planning & Development
 - TLU-2 Transit, Bike & Pedestrian Infrastructure
 - TLU-5 Climate-Friendly Transportation Pricing [in part]
 - TLU-7 Fix-It-First
 - TLU-8 Update Road Standards [in part]
 - TLU-9 Commuter Choice
 - TLU-10 Congestion Pricing

- Reducing motor vehicles emissions [Cleaner Fuels]
 - TLU-3 Biofuels
 - TLU-6 Adopt CA Clean Car Standards
 - TLU-5 Climate-Friendly Transportation Pricing [in part]

- Reducing per vehicle fuel consumption [Improved Vehicle Efficiency]
 - TLU-4 Infrastructure Management
 - TLU-8 Update Road Standards [in part]
 - TLU-11 Truck Stop Electrification
 - TLU-12 Mobile Source Emissions Reduction
 - TLU-13 Reduced Speed Limits

TLU-1 Improved Land Use Planning and Development Strategies

Policy Description

Implement land use planning and development strategies that reduce the number of vehicle miles traveled and corresponding greenhouse gas emissions. Strategies include more compact development, transit-oriented development and other tools which encourage people to drive fewer miles.

Policy Design

Goals:

- Vehicle miles traveled in Minnesota will be reduced in an amount equal to the total miles driven in 1990 by the year 2025. Vehicle miles traveled since 1990 have increased statewide by 45 percent, one of the fast growth rates in the nation, far outpacing the state population growth of 19 percent in the same time period. This trend is indicative of a development pattern that does not efficiently use land and encourages auto-dependency. Strategic land use planning and more compact development is crucial to reducing greenhouse gas emissions through trip length reduction, as measured in vehicle miles traveled.
- Establish land use and development requirements and incentives that will encourage 1) higher density, mixed-use, pedestrian- friendly, development and 2) well-connected streets with the goal of increasing the number of trips by walking, bicycling, and transit, and reducing the number of vehicle trips and the length of those trips.

Timing: Statewide and regional planning goals developed in 2008-2009. Best practices technical assistance to be prepared in 2008-2009. To achieve VMT goals, policy implementation should commence as soon as possible.

Parties Involved: All layers of government: local, county, school districts, regional, state, including elected officials, commissions and staff; Developers & contractors; Employers; Homeowners

Other: None.

Implementation Mechanisms

- Infill and Brownfield Development

Residential and commercial development on infill typically results in less vehicle travel and fewer emissions as compared to development on lower density exurban or “greenfield” locations. Households and workers in areas with higher density and mixed uses typically take shorter trips and have 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.

- Provide financial incentives to encourage brownfield redevelopment.

- Transit-Oriented Development

Transit oriented development reduces vehicle miles by building compact, mixed-use development clustered around transit stops. Such development would be promoted through incentives and/or regulation. Governments could require that planning/zoning for transit oriented development accompany new high capacity transit investments.

- Improve street connectivity to reduce the need for overly large urban arterial roads and to make walking, and walking to transit, safer and more convenient.

- Smart Growth Planning, Modeling and 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.

- Institute statewide and municipal planning requirements to encourage the majority of new development and redevelopment to occur in existing town centers, regional centers, neighborhood centers, and transit accessible locations. (Similar to Oregon, Maryland, Seattle).
- Require state and municipal plans to include goals and strategies for reducing GHG emissions.
- Revise siting requirements for new schools (state law) to make it easier for children, teachers, and parents to get to school on foot, bicycle, and transit.
- Provide technical assistance to communities on best practices in zoning, parking, and street design to improve planning and development.

- Targeted open space protection

Targeted open space protection includes programs designed to protect and conserve State lands and other open spaces, and develop and improve neighborhood, community, and regional parks in ways that encourage location-efficient growth and broader mode choice. 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 resource lands for agricultural or forestry uses to serve local markets can promote these objectives.

- Preserve key natural areas, agricultural land, and park land which will help to guide development and redevelopment into targeted growth areas,

- Priority Areas Designated For Planned Growth

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. More efficient development patterns reduce VMT and help

conserve natural resource land and natural areas. This strategy aims to limit the urban growth areas while increasing residential density. Residents living in neighborhoods with higher population density tend to drive less than those living in lower density neighborhoods. This is a result of both shorter trips (because housing and commercial uses are in closer proximity to one another in higher density neighborhoods) and use of alternative travel models (because higher density neighborhoods tend to offer better walking, bicycling, and transit options). Governments can promote increases in residential density through a number of planning activities, incentives, and/or regulatory changes.

- Target transportation, housing, state general obligation bonding, and other state and federal dollars to those projects that help meet these land use and development goals.

Related Policies/Programs in Place

Recent Actions in MN:

- 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.
- 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.
- 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.
- 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.

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

- **Data Sources:**

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

Key Uncertainties

TBD

Additional Benefits and Costs

- **Other benefits:** Greatly reduce infrastructure costs (*A 2002 report prepared by a consultant to the Metropolitan Council hired to study regional growth development options* showed a \$2 billion savings in infrastructure costs over 20 years under a compact development scenario for the TC metropolitan area.) Make transit service more feasible and cost effective (need a minimum of 8 residential units per acre for minimum level bus service, 15 units per acre for frequent bus service, and 30 units per acre for rail service). Improve public health by making it easier and safer for people to walk. Reduce the number and severity of vehicle crashes by reducing the number of high-speed, high-traffic arterial streets. Encourage social interaction with more people walking, bicycling, and riding public transit.

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-1 Category: How far are we driving?

Overarching Goal

Vehicle miles traveled in Minnesota are equal in the aggregate to the amount driven in 1990 by 2025, with a benchmark year of reducing to the 2000 level by 2013.

	2007	2013	2025
Proposed action – reduce to 1990 levels of vehicle miles traveled	60 billion	53 billion	39 billion
No action – continue according to trends	60 billion	67 billion	82 billion

Minority position/recommendation to MCCAG: Establish goals at a *per capita level* as opposed to a gross reduction in VMT.

	2007	2013	2025
Proposed action – reduce to 1990 levels of vehicle miles traveled <u>per person</u>	60 billion (11,285 per person)	61 billion (10,692 per person)	55 billion (8,900 per person)
No action – continue according to trends <u>per person</u>	60 billion (11,285 per person)	67 billion (11,939 per person)	82 billion (13,346 per person)

All numbers are estimates based on available data and subject to further refinement.

TLU strategies to achieve reduction in the number of vehicle miles traveled.

TLU-2: Expand Transit, Bicycle, and Pedestrian Infrastructure

Policy Description

Expand infrastructure and programs to increase transit ridership, carpooling, bicycling and walking. This strategy will reduce GHG emissions by reducing vehicle miles traveled (fewer vehicle trips and shorter trip distances). (Part of VMT reduction goal along with TLU strategies 1,5,7,8,9,10)

Policy Design

Goals:

- Implement the Metropolitan Council's transit plan to double transit ridership by 2020 (from 75 million rides annually to 150 million), ten years sooner than the current target date of 2030. The Council's transit plan calls for investment in light rail, commuter rail, bus rapid transit and expanded bus service.
- Improve/expand transit (rail and bus) service between regional centers in Greater Minnesota and the Twin Cities region including Rochester, Marshall, Winona, Bemidji, Duluth, Detroit Lakes, Mankato, Grand Rapids, East Grand Forks, Others? Provide/ensure (twice daily?) service between these communities and the Twin Cities region.
- Increase bike and pedestrian infrastructure in cities across Minnesota including sidewalks, trails, bike lanes, and other amenities that make walking and bicycling safer and more convenient.

Timing: Begin implementation by 2008 and complete implementation by 2020.

Parties Involved: Legislature, Met. Council, MnDOT, Metropolitan Transitways Development Board, counties, cities, freight rail, private sector businesses.

Other: TBD

Implementation Mechanisms

Expand Transit Service

- The Met. Council transit plan calls for adding light rail, commuter rail, dedicated busways and increasing regular route bus service by 80% (more routes and more frequent service) This expansion would also include additional marketing, promotion, and pricing incentives (including tax incentives for non-profits).

Expand transit service between Greater Mn and the TC Metropolitan Area. Could say connect with Amtrak.

Expand Bike and Pedestrian Infrastructure

- Add and improve sidewalks, trails, bike lanes, and other amenities including lighting, landscaping, bike parking, lockers, etc. bikeways.

Transportation Demand Management

- Transportation demand management (TDM) strategies focus on changing travel behavior – trip rates, trip length, travel mode, time-of-day, etc. Most TDM projects and programs reduce emissions by reducing trips and/or vehicle miles traveled (VMT) by personal motor vehicles, or by shifting trips from peak periods to less congested periods.

Related Policies/Programs in Place

Recent Actions in MN:

- 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.
- 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.
- 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.

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

Additional cost for Met. Council plan implementation is estimated to be \$210 million per year for 13 years or nearly \$3 billion. Cost savings include a reduced need for parking, lower household costs for transportation, reduced traffic congestion, improved air quality, and improved health for new transit riders who walk to transit.

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD



TLU-3 Low Greenhouse Gas (GHG) Fuel Standard

Policy Description

The transportation sector accounts for approximately 25% of total MN emissions, with CO₂ from on-road gasoline and diesel combustion comprising roughly 75% of all transportation-related CO₂. The opportunity exists to implement a low carbon fuel standard (LGFS) that would create a market-based program to reduce the GHG emissions from transport fuels and diversify transport fuel options for consumers.

The LGFS is not designed to be biased toward any particular fuel.¹ Instead, the LGFS is designed to require fuel providers to reduce the greenhouse gas (GHG) intensity of the fuels they sell in Minnesota. “Fuel providers” are identified as producers, importers, refiners, and blenders. The GHG intensity is specified as a CO₂ equivalent² per BTU.

The LGFS is not a tailpipe standard for GHGs. The LGFS considers GHG emissions on a full fuel cycle basis, which includes not only tailpipe emissions, but also emissions associated with the production and distribution of fuels. This will result in varying carbon impact values for fuels that would ostensibly be the same to customers.³ This has a significant impact to MN in that E10, the current maximum ethanol blend percentage for non flex-fuel vehicles, is the state mandated standard for all gasoline blends.

Policy Design

Goals: Implement policy that reduces the average carbon intensity of on-road transportation fuel 25 % by 2012 and 50% by 2025. Need to determine how this impacts the reduction of gasoline and diesel consumption from mobile sources **25% by 2010 and 50% by 2015.** (Well, it can reduce the use of gasoline or diesel since some biofuel would replace some part of it.)

Timing: TBD

Parties Involved: All layers of government, fuel providers

Implementation Mechanisms

- Partnership with the University of Minnesota and the Department of Transportation to create the framework for the LCFS.
- Market-based mechanisms for fuel providers to choose how they wish to meet LGFS.
- Full life cycle basis of measuring GHG impact of transportation fuels. Implemented by a cap and trade system for fuel providers.

¹ Alternative fuels are defined in the [Energy Policy Act of 1992](#) and include: biodiesel, electricity, ethanol, hydrogen, natural gas, and propane.

² Each GHG has a global warming potential that allows it to be expressed in terms of CO₂. This notation is referred to as carbon dioxide equivalent (CO₂e). For example, methane, CH₄, has a GWP of 23. Therefore, 1 MT of CH₄ can be expressed as 23 MT of CO₂e.

³ For example, E10 where the ethanol is derived from cellulose has the potential to reduce the full fuel cycle carbon impact as compared to E10 where the ethanol is derived from corn.

- Financial incentives for refueling station creation and retrofitting based on LGFS.
- Certification process

Related Policies/Programs in Place

Recent Actions in MN:

- Current State policy for fossil diesel displacement is 2% biodiesel blend. For gasoline displacement, current policy is 20% ethanol displacement by 2013; with a carve-out goal for 5% derived from cellulosic material. Current petroleum displacement goal is 20% of the liquid fuel sold in the State will come from renewable sources by the year 2015 and 25% by 2025.
- *[In addition to the conversation on biofuels we need to add a piece on any recent efficiency issues, etc with the oil/refining sector – this is not just a biofuels policy but a full transportation fuels policy, inclusive of other alternative fuels and better extracted/refined oil]*
- 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
- Ethanol: Minnesota established an ethanol production incentive to provide payment to producers to help develop a new market for Minnesota’s agricultural products. On the market side, Minnesota requires that all gasoline sold in the state be blended with a 10% ethanol mix. In addition, Minnesota began efforts in 1997 to develop a network of fueling stations for flex fuel vehicles that could run on an 85% ethanol blend. Today Minnesota has over three hundred E85 fueling stations around the state that together sold a total of \$18,160,000 gallons of E85 blended gasoline during 2006.
<http://www.pca.state.mn.us/programs/ethanol.html>;
<http://www.pca.state.mn.us/programs/ethanol.html#links>
- Biodiesel: According the U.S. Department of Energy, biodiesel has the most favorable energy balance of any transportation fuel. For every unit of energy needed to produce a gallon of biodiesel, 3.2 units of energy are gained. As of September 29, 2005, Minnesota requires nearly all diesel fuel sold in the state to contain at least a 2 percent biodiesel blend. It is estimated that the 2% fuels use requirement for Minnesota will replace 16 million gallons of diesel fuel. [Minn. Stat. § 239.77](http://www.pca.state.mn.us/air/cleanfuels.htm); <http://www.pca.state.mn.us/air/cleanfuels.htm>
<http://www.mda.state.mn.us/renewable/biodiesel/default.htm>

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

- Vehicle OEM and warranty issues with biodiesel blends and ethanol blends of greater than e10; potential necessity for an EPA waiver required for higher biofuel blends. It is important to consider the impact of E10 or potential higher blends on older vehicles as well as non-automotive engines.
- Concern around impact of higher biofuel blends for older engines
- Debate on fuel quality standards, primarily for biodiesel blends

TLU-4 Infrastructure Management

Policy Description

Coordinated investment, and operation of, regional transportation infrastructure can improve system efficiency, reliability, and safety, and reduce fuel use and GHG emissions. With the state as a coordinator, build on current efforts to coordinate transportation investments and operations to create a seamless multi-modal system. Tools to reduce traffic congestion include HOT lanes, synchronized signals, incident management, real-time information about congestion, transit, and parking, and other forms of integrated intelligent transportation systems (ITS).

Policy Design

Goals: Use infrastructure management to reduce urban-area emissions by 10% by 2025 relative to the baseline.

- Adopt a "complete streets" policy in Minnesota that would apply to all new and reconstructed roads. Ensure, through an inclusive process, that roads are designed to better serve all users including vehicle drivers, transit users, pedestrians, freight and truck traffic, and bicyclist's..(Exceptions can be made for rural roads between communities, etc.) Pursue an "Urban Preservation Route" street classification, similar to the "Natural Preservation Route" that exists today.
- Encourage cities and counties to develop bicycle and pedestrian plans to identify needs and priorities.
- This strategy is designed to increase walking, bicycling, and transit use, and encourage development patterns that support these modes and reduce the number and length of motor vehicle trips.
- Encourage round-a-bouts

Timing: By 2025

Parties Involved: All state transportation providers.

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

Recent Actions in MN:

- 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.

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

[On October 18, TWG decided to move TLU-8 under TLU-4]

TLU-8 Revise Minnesota Road Standards to Balance the Needs of all Users

Policy Design

Goals: This strategy would be part of an overall VMT reduction goal. It is often a Smart Growth strategy .

Timing: 2008-9 adoption and then ongoing implementation.

Parties Involved: Legislature, city and county engineers, MnDOT, local elected officials, bike, transit, and pedestrian interests, MN Trucking Association, others.

TLU-5 Climate-Friendly Transportation Pricing

Policy Description

Implement a series of policies to change the fixed costs (increase the variable costs?) of automobile ownership (use?) to reflect the costs related to VMT and emissions, including CO₂-based registration fees, a (higher?) fuel taxes (to pay for transportation costs now paid for with property taxes), (new) VMT tax, and/or pay-as-you drive insurance. Such policies can reduce the cost differential between a SOV trip and a public transit trip and provide a greater financial incentive? reward for individuals who reduce VMT or purchase low-GHG vehicles. Additionally, revenue resulting from these policies could, in turn, fund transit and other transportation alternatives resulting in further emissions reductions.

Policy Design

Short-term:

1. Increase the state's fuel tax and vehicle registration fees to improve (better maintain? or do we mean expand?) transportation infrastructure and reduce bottlenecks/congestion.
2. To encourage purchase of low-GHG emitting passenger vehicles, institute a "greenhouse gas emission fee" with higher fees charged for higher emitting vehicles. Revenue collected should be dedicated to transit investments.
3. Have insurance companies institute a "pay as you drive" system when figuring premiums of auto policyholders. This should be voluntary, but assumes 50% market penetration by 2015.
4. Encourage lower-cost highway expansion projects to eliminate bottlenecks that result in delay and vehicle idling.

Long-term:

In conjunction with national efforts, Minnesota should institute a mileage tax, in place of the current funding system for roads. For purposes of this exercise, we assume that happens in 2015. [Thoman disagrees with this -- you lose the value of having people pay lower taxes if they drive a fuel efficient car which reduces GHG emissions. Some say a VMT tax is more politically feasible than raising the gas tax, but no state has yet implemented such a system!]

Anytime:

Provide income tax incentives to encourage an increase in the use of low-GHG emitting vehicles and technologies.

Policy design for all components of this package should take into account and mitigate equity impacts, through, for example, life-line policies.

Timing: Passage of a comprehensive transportation funding package, GHG emission fees and tax incentives during the 2008 Legislative Session, effective July 1, 2008. Mileage tax replacement would be enacted in 2015.

Parties involved: Highway and transit users, automobile manufacturers, insurance companies, state departments of commerce, transportation, public safety, revenue, finance, and pollution control, Metropolitan Council.

Other: Since the motor fuel tax, registration fees, and motor vehicle sales tax are constitutionally dedicated to "highways purposes," and significant use of these monies for transit, bicycling, or pedestrian projects would invite a law suit or require amending the state's constitution. In addition, offering exemptions/reductions in any of these funding mechanisms to encourage the purchase of low-GHG vehicles would decrease the amount of available transportation dollars that are already lacking, for road and transit improvements and counter TLU strategies 2, 7 and 8.

Implementation Mechanisms

CO₂-Based Registration Fees

- The state could adopt a variety of programs to increase purchase of fuel-efficient or low-GHG vehicles (including pure electric, hybrid, plug-in hybrid, and other alternative fuel vehicles). State incentives could include registration fees, feebates, and/or tax credits. Higher vehicle registration fees can be charged for vehicles that have lower fuel economy, and/or vehicles that use alternative fuels or hybrid vehicles could be charged a lower vehicle registration fee. Vehicle licensing fees could be based upon vehicle weight, with use of a dollar per vehicle-ton multiplier instead of the present broad categories of vehicle weight.

VMT Tax

- The state would charge a tax reflective of miles traveled by passenger vehicles. In addition, revenues could be used to fund transit and other transportation alternatives within a corridor or region.

Pay-as-You-Drive automobile insurance

- The state would encourage and support the provision of pay-as-you-drive auto insurance, possibly including state support for additional pilot programs. This would also require the state commission to conduct an active review of possibilities.

Increase Motor Fuel Taxes

- Increasing the state tax on conventional fuels can reduce consumption and travel while encouraging the use of lower emissions vehicles, alternative fuels, and public transit. In addition, revenues can be used to fund transit and other transportation alternatives within a corridor or region.

[On October 24, TWG decided to move TLU-10 into TLU-5 under implementation mechanisms.]

TLU-10 Congestion Pricing (or tolls) with targeted use of revenue towards travel alternatives

Comments from Dave VanHattum - The key elements of my changes are:

1) Focusing exclusively on Congestion Pricing not roadway tolls. The latter would help build more roads and lead to less traffic congestion (at least in the short term), but would almost certainly lead to increased CO₂ emissions per capita as people live further out and commute longer distances.

2) Direct revenues from Congestion Pricing to transit. Again, any revenues generated beyond that needed to convert bus-only shoulders to HOT lanes and to implement electronic tolling, should go to increasing transit options, both to build political support for congestion pricing and to maximize CO2 reductions. Using the money to add additional roadway capacity is unlikely to have a CO2 benefit.

3) Set the Cordon Pricing toll at a level that a substantial number of commuters would be willing to pay -- otherwise this proposal would be viewed as pushing business out of the urbanized area -- which, in the long-run, is likely to increase CO2 emissions per capita.

Policy Description

In certain highway corridors, institute congestion pricing -- charging single occupant vehicles (SOV's) a variable fee relative to travel demand -- to price motor vehicle use more in line with real costs, and to provide revenue for less CO2-intensive travel options (i.e. public transit, vanpooling, etc).

Policy Design

1. High Occupancy Toll (HOT) Network

Goal: *Establish a network of lanes that allow public transit vehicles, carpools, and SOV's willing to pay a fee, congestion-free travel. The electronically charged toll for use of these HOT lanes would vary by time of day and traffic conditions to ensure free-flowing conditions at posted highway speeds. The network should consist of the existing HOT lanes on I-394, the HOT lanes proposed for I-35W (selected for a US DOT Urban Partnership Agreement), and other highway corridors that exhibit the highest level of traffic congestion and the ability to cost-effectively turn bus-only shoulder lanes into a HOT lane.*

Timing: *The HOT network should be phased in over time and completely operational by 2015. Assume that highway expansions identified in the Metro District's fiscally constrained Transportation System Plan will follow the timing set out by MNDOT. Assume the rest of the highway lanes needed will be phased in between 2008 and 2015 by corridor based on highest traffic counts.*

Parties Involved: *Minnesota Department of Transportation, Metropolitan Council.*

Other: *Assume the toll proceeds are used in the following manner: 1) pay back the trunk highway fund and any other funding source for monies spent to establish each lane, 2) pay all the costs of implementing and administering the toll collection system for that lane, and 3) the remainder, if any, for the expansion and improvement of transit services within the HOT lane corridor.*

2. Cordon Pricing

Goal: Establish a cordon pricing system similar to that used in Stockholm and Oslo. All vehicles other than public transit should be charged a fee when entering the Twin Cities' urbanized core on a principal arterial at the I-494/I-694 beltway. The fee should be collected electronically and vary by time of day, but in peak periods be at least twice the peak period transit fare then in effect.

Timing: The cordon pricing system should be phased in over time but be completely operational by 2015. The phase-in should be by principal arterial based on highest traffic count.

Parties Involved: Minnesota Department of Transportation, Metropolitan Council.

Other: All proceeds should be used to support the transit element of the Metropolitan Council's 2030 Transportation Policy Plan.

Related Policies/Programs in Place

Recent Actions in MN:

- MNDOT currently studying the VMT finance mechanism. [TLU-5]
- I-394 is HOT lane. MOU between MC and MNDOT to consider additional HOT lanes in future highway improvements. [TLU-10]

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-6 Adopt CA Clean Car Standards

Policy Description

Reduce greenhouse gas emissions from new motor vehicles (cars and light trucks) sold in Minnesota 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 and hydrofluorocarbon emissions resulting from leakage from or operation of the air conditioning system.

[This is confusing...it mixes up tailpipe emissions and GHGs.]

It is important to understand that cars for the 2011 model year are already being designed and that new engine lines take 6-7 years to develop. Because of the extremely stringent timelines and requirements in the CA GHG standards that occur in the 2010-2013 timeframe, it is likely that MN consumers will have a much smaller choice of vehicles to choose from if these standards are implemented.

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 (assuming the legislature would act in 2008).
- **Parties Involved:** TBD
- **Other:** California standards constrain the sale of E85 vehicles. This is due to the PZEV standard and the testing on worst case blend of fuel (E10). This is likely to require switching back to metal fuel tanks, which add weight and packaging issues. Also, SULEV tailpipe emissions are difficult at cold temperatures required by CARB. HC emissions exceed the standard before the catalyst is warmed up. The increasing level of PZEV and SULEV vehicles in CA conflict with the sale of E85 vehicles.

Implementation Mechanisms

TBD

Related Policies/Programs in Place

Since California’s adoption of the Clean Car Standards, 12 additional states have adopted similar standards.. 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 is likely to result in higher CAFE standards for the industry.

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

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

Key Uncertainties

The auto industry has sued CA and a couple of other states since there is federal preemption over fuel economy requirements. Regardless of the outcome of these trials, the losing party is likely to appeal, resulting in delays. It is likely to be 3-4 years before the courts resolve this issue delaying any possible adoption of these rules. Implementation of these rules is also dependent on the granting of a waiver to California by EPA. It is unclear what decision EPA will make. This decision is expected by the end of 2007.

Additional Benefits and Costs

CARB estimates that the ultimate GHG standards will cost \$1,064. A consultant to the auto industry has reviewed CARB's cost data and found errors in their calculations. For this reason, the auto industry believes the cost per vehicle will be, on average, \$3,000 for complying with these requirements. In either case, increasing the cost of vehicles will delay the turnover of the fleet to cleaner, more safe vehicles.

Feasibility Issues

Manufacturers have stated under oath that they cannot meet the CA GHG standards. The only way to attempt to comply is to severely restrict model availability.

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-7 “Fix-it-First” Transportation Investment Policy and Practice

Policy Description

Prioritize state and federal transportation investments first in 1) maintenance of existing roads, and second in 2) new and expanded roads designed to serve higher density, more compact, pedestrian friendly development in priority growth areas (examples might include: town centers, regional centers, transit station areas, others?). Significantly reduce investment in new roads and roadway expansion that accommodates/encourages low-density development and more and longer vehicle trips. This strategy will increase trips by bicycling and walking and reduce the number and length of vehicle trips thus reducing emissions of greenhouse gases. (Part of VMT reduction goal along with TLU strategies 1,2,5,8,9,10)

Policy Design

Goals: Place a much higher priority on maintenance of existing roads. Strategically target roadway expansion dollars as described above. Expansion projects comprise approximately 40% (approx. \$600 million) of \$1.6 billion in transportation investments planned for 2008-2011 in the Twin Cities metropolitan area. (See metro TIP document page 48).

Review statewide plan (STIP) to get dollar amounts and percentages for Greater Minnesota.

Timing: Legislation drafted in 2008-2009 and adopted in 2009; changes in investments starting 2011 (federally required Transportation Improvement Program document with listed projects is already in place for 2008-2011).

Parties Involved: MNDOT, Local Units of Government, Metropolitan Council, Legislature, Developers, Business Community

Other: TBD

Need legislation adopted by 2009 that identifies goals, investments policies including targeted growth areas, implementation steps, etc.

Related Policies/Programs in Place

Recent Actions in MN:

- Regional highway plan in MC Transportation Policy Plan states that highway expansion investments are only considered after preservation and management investments have been funded.

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD



TLU-9 Workplace Tools to Encourage Carpooling, Bicycling, and Transit Ridership

Policy Description

Policy Description

Reduce emissions by offering commuter benefits at the workplace to increase the use of transit, ride-sharing and non-motorized transportation. Commuter benefits include: reducing the amount of free or subsidized parking; providing paid or pre-tax transit passes or mode-neutral transportation allowances, guaranteeing rides home for non-drive alones; telecommuting programs, and converting employee ID cards to transit passes. Also, reduce emissions by requiring large non-rural employers (over 200 employees) to develop and implement “transit demand management” plans (“TDM”) that customize commuter benefits and transit-supportive building design to specific building locations.

Policy Design

Goals:

Commuter Benefits

1. All Minnesota non-rural employers over 200 employees offer Commuter Benefits (CB) programs
2. All colleges and universities offer Commuter Benefits
3. All government units offer Commuter Benefits, especially the state of Minnesota
4. State adopts employee parking management and incentive programs to promote alternatives to drive alone (SOV) commuting.

Commuter Choice

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 TDM, and assist employers of over 200 employees in developing and implementing TDM plans. (State is already committed to doing this in the Twin Cities Metro through Metro Transit and five transportation management organizations).

State Tax Credits for Employer-provided Commuter Benefits

Expand the current Minnesota Employer Transit Pass tax credit to include more employers and more commuters (i.e. non-profit organizations and commuters that bike, carpool, or telecommute).

Timing: Implement by 2010.

- **Parties Involved:** Metropolitan Council, Mn State College and University, U of M, other colleges, municipalities, transit providers, Transportation Management Organizations, employers, state legislature.
- **Other:** TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

- Employee Discount Transit Passes: Metro Transit offers passes for regular route bus service for sale to employers at a 30% special discount rate for their employees to promote mass transit and reduce both congestion and emissions in the Metro area.
<http://www.metrotransit.org/groupDiscProg/metroPass.asp>

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-11 Truck Stop Electrification

Policy Description

Reduce idling-induced emissions from heavy-duty diesel trucks by providing electrical hook-ups to power heating, cooling, and other needs while stopped.

Policy Design

Goals: TBD

Timing: TBD

Parties Involved: TBD

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

- Idle Reduction Program: The MPCA, in cooperation with the U.S. EPA, offers loans to help small trucking companies pay for idle reduction devices such as auxiliary power units. This equipment can reduce fuel consumption by 75 percent, which conserves resources, helps achieve energy independence, and reduces the emissions that contribute to soot and smog. During 2006, 30 loans were issued ranging from \$7,500 to a maximum of \$50,000.

http://www.pca.state.mn.us/programs/sbomb_loan.html

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-12 Mobile Source Emissions Reduction

Policy Description

Support on-going and new reduction options to achieve immediate and direct emissions reduction from mobile sources (e.g., Project Green Fleet school bus retrofit) that can be done without legislation or regulation. This will bolster prior investments of local, state and federal governments in Minnesota and leverage significant federal, private and foundation support.

According to the MPCA, more than a quarter of Minnesota's greenhouse gases and nearly half of all air pollution is generated by mobile sources. From a health-risk perspective, the MPCA calculates that more than half of the elevated risk of cancer from toxic air pollutants comes from mobile sources. In some mobile source areas, the State of Minnesota through Executive Orders is already leading by example and can serve as a model for expansion of emission reduction activities.

Mobile source emission-reduction options gained greater relevance to climate change with the release of a study recently in the journal *Nature*. The study points out the significance of ground-level ozone levels to climate change improvement activities. Mobile sources are one of the primary sources of ground-level ozone precursors. According to the study, "Ozone could be twice as important as we previously thought as a driver of climate change." The study reports that "ozone near the ground damages plants, reducing their ability to mop up carbon dioxide from the atmosphere."

Policy Design

Goals: *Double* the quantifiable emission-reductions from these projects, relative to the baseline; increase the number of partners and funders for projects.

Timing: Immediate; many of these projects are ongoing and will be expanded in the near future.

Parties Involved: Minnesota Environmental Initiative (Project Green Fleet and Clean Air MN) and multiple public and private funders and partners; Minnesota Trucking Association; Minnesota Chamber of Commerce; Minnesota Center for Environmental Advocacy; GE Fleet Services; MPCA; U.S. EPA; Hennepin County

Other: TBD

Implementation Mechanisms

TBD

Related Policies/Programs in Place

TBD

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD

TLU-13 Reduce Maximum Speed limits

Policy Description

Reduce maximum speed limits on highways in Minnesota to improve fuel economy and reduce GHG emissions per mile traveled.

Policy Design

Goals: Reduce maximum speed limit on urban interstates to 55 mph (from 65 mph today) and to 60 mph on rural interstates (from 70 mph today). Speed limits will be 55 on highways not specified by statute (same as today). This strategy is one that reduces GHG emissions per mile traveled but does not reduce vehicle miles traveled.

Timing: Change law during 2008 legislative session with an effective date of January 1, 2009 so that there is enough time to educate the public about the change.

Parties Involved: Highway users, Minnesota Department of Transportation, Minnesota State Patrol, local law enforcement

Other: TBD

Notes: The speed a vehicle is driven has a major impact on fuel economy. While each vehicle reaches its optimal fuel economy at a different speed (or range of speeds), gas mileage usually decreases rapidly at speeds above 55-60 mph.

A significant additional benefit of lowering speed limits is reduced injuries and fatalities. The Canada Safety Council writes on its web site, that “As speed increases over 100 km/h,(60 mph) the fatality rate of vehicle occupants goes up exponentially. For example, the chances of being killed in a vehicle traveling at 120 km/h (72 mph) are four times higher than at 100 km/h.” (60 mph).

The same web site also notes that “A recent study examined the impact of higher travel speeds on US rural interstates after the repeal in November 1995 of the national speed limit. Researchers found states that had increased their speed limits to 75 mph (120 km/h) experienced a shocking 38 per cent increase in deaths per million vehicle miles than expected, compared to deaths in those states that did not change their speed limits. States that increased speed limits to 70 mph (112 km/h) showed a 35 per cent increase in fatalities.”

[There was extensive discussion of enforcement; I believe this belongs under the “Implementation” section.]

Implementation Mechanisms

TBD

Related Policies/Programs in Place

TBD

Types(s) of GHG Reductions

TBD

Estimated GHG Reductions and Net Costs or Cost Savings

TBD

Data Sources: TBD

Quantification Methods: TBD

Key Assumptions: TBD

Key Uncertainties

TBD

Additional Benefits and Costs

TBD

Feasibility Issues

TBD

Status of Group Approval

Pending

Level of Group Support

TBD

Barriers to Consensus

TBD