# FINAL DRAFT
# FINANCIAL INCENTIVES FOR REDUCING HIGHWAY TRAVEL AND ENERGY DEMANDS IN WISCONSIN

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## ABSTRACT

Over the past 30 years, the State of Wisconsin has seen severalfold increases in the number of vehicle miles traveled on its state highway system. The increases have led to severalfold increases in traffic congestion, continuing dispersal of business and residential developments to the peripheries of cities, and beyond, and major increases in tailpipe emissions, and carbon dioxide to the atmosphere. The environmental impact of continuing highway development, and increased business and residential development of rural areas made more accessible by improved highways, continues to add harm to Wisconsin's environment, its communities and its quality of life in numerous, irreparable ways.

The total vehicle miles traveled (VMT) in Wisconsin in 1998 exceeded 56 billion miles, an average of 15,094 VMT per licensed driver, and 42,800 VMT per 4-person state household. The average VMT per 4-person household in 1970 in Wisconsin was 23,480 miles, while the total amount of highway VMT in Wisconsin in 1970 was 24.3 billion miles. Figures for the amount of public dollars spent on improving Wisconsin's highways since 1970, and the number of lane miles imprinted on Wisconsin's landscape since 1970, have not been documented. What has been documented is that the State of Wisconsin plans to imprint another 2,800 miles of highway on the remaining Wisconsin landscape, at a cost of 8 additional billion dollars of public tax money (Wisconsin Department of Transportation's State Highway Plan 2020, November, 1999).

This paper identifies an alternative to additional road building in Wisconsin, which would save Wisconsin taxpayers $8 billion dollars over ten years. The alternative would return $8 billion of the money the State and U.S. Government collects to Wisconsin residents who voluntarily reduce the total statewide VMT. By giving Wisconsin residents a financial incentive, this option to building more roads would encourage people to choose more environmentally friendly means of travel (bicycling, walking, taking a bus,

carpooling more, or moving closer to where they work, go to school, or shop), thus reducing their overall car driving needs. It is postulated that the reductions in the statewide VMT in ten years that will be brought about by the VMT reduction alternative would eliminate the need for further highway capacity expansion in Wisconsin. The result will be a public tax savings of $8 billion. The reductions in VMT will also bring about savings in the environmental cost of transportation, as more highways would not need to be built through farmlands, wildlife habitat and residential areas.

Additionally, fewer homes and businesses would be built in rural areas since people will be given an incentive to live closer to where they work or shop so that they do not need to drive as much. But it should not affect the level of funding needed to preserve the safety and integrity of the current highway system, since those costs are covered by the remaining $12 billion identified in the State Highway Plan 2020 as needed to maintain the highway system in the next 20 years.

This paper also identifies a similar incentive strategy for reducing energy power demands and greenhouse gas emissions by outlining a program that would pay financial incentives to households that use low amounts of energy per capita (p. 10). Reducing projected per capita power demands in Wisconsin (and elsewhere) would reduce the projected need to build additional power plants, electric transmission lines, natural gas lines and fuel transport facilities. Just as positive financial incentives can be used to encourage reduced motor vehicle use by the driving public, so too can positive financial incentives encourage reduced energy use by people and businesses.

## INTRODUCTION

### Projected VMT Increases, the Implications and the Causes

The number of vehicle miles traveled on the Wisconsin highway system has increased from 24 billion VMT in 1970 to an estimated 56 billion miles per year today (132%, or 4.6% per year), its highest level ever. The Wisconsin Department of Transportation (WDOT) estimates VMT will increase to at least 62.3 billion miles per year on the state's highways by 2020 (State Highway Plan Global Evaluation, 1997).

As VMT increases in Wisconsin, there are more toxic pollutants and carbon dioxide added to Wisconsin's air; there are more heavy metals, oil, grease, and salt from roadways added to Wisconsin's water resources; there is more road noise and permanent land disturbance from highway construction in Wisconsin's urban and rural areas; and there are more auto traffic congestion and safety problems generated in Wisconsin's cities, suburbs and townships because of the increasing number of vehicles on the roads.

In their Final State Highway Plan 2020, the WDOT proposes to accommodate this increase in VMT by proposing to direct one third of its proposed $20 billion plan toward expanding the capacity of the existing state highway system to accommodate more vehicles traveling each day. The Wisconsin highway expansion would occur primarily in the form of adding 2,800 new miles of highway lanes, 34 community bypasses and 25,000 additional acres of highway infrastructure on the Wisconsin landscape, replacing the uses of those lands, which are currently devoted to homes, wildlife areas, agriculture and existing commercial developments, with cement and asphalt surfaces.

Expanding highway capacity would increase the potential for additional development in suburban and rural areas not previously thought to be close enough for one's daily commute. The result will be added use and congestion on the improved highways, increasing the need for even more improvements, and expansions, further out from the original urban area and the surrounding suburbs. Inevitably, many of the businesses located in the original urban area may move out to the country, past the suburbs, converting more rural land to commercial and industrial development, and encouraging additional residential sprawl around those new developments.

This land development pattern has become common in many sprawling areas of the country.

The average person in Wisconsin travels almost twice as many miles on state highways now as in 1970. In 1970, the average VMT per person in Wisconsin was 5,870 miles a year. Today, the average VMT per person is 10,700 miles, per year, and growing. The average number of vehicle miles traveled in 1999 was 15,094 miles per licensed driver.

The following data is cited as reasons for the 132% increase in VMT in Wisconsin in the past 30 years:

1) The increase in Wisconsin's population from 4.4 million people in 1970 to 5.3 million people in 1999 (a 20% increase) (Wis. Department of Administration 1999).
2) The decline in carpooling to work from 19.7 % of the total modes used in getting to work in 1980, to 13.4% in 1990 (a 32% decline) (U. S. Census of Population).
3) The decline in using public transit to travel to work, from 6.4% of the total modes used in getting to work in 1980 to 5.3% in 1990 (a 17% decline) (U. S. Census).
4) The decline in walking to work, from 5.6% of the total modes used in getting to work in 1980 to 3.9 % in 1990 (a 26% decline) (U. S. Census).
5) The increase in driving a vehicle alone to work, from 64.4% of the total modes used in getting to work in 1980 to 73.2% in 1990 (a 17% increase) (U. S. Census).
6) The increase in economic prosperity, which means more people drive to more jobs and take more vacations, most of which are taken by car.
7) An increase in trip lengths (35% increase) and trips taken (18% increase), nationwide (Federal Highway Administration, Travel Behavior Issues in the 90's, U.S. Department of Transportation).

## FINANCIAL INCENTIVES FOR LOW DRIVING

### An Alternative to Roadway Expansion: VMT Reduction Incentives

The Department of Natural Resources (WDNR) May 13, 1999 comments on the DOT's Draft State Highway Plan called for the development and evaluation of a VMT reduction incentive program, which would financially reward households that record low VMT on the state's highway system during the year.

The remainder of this paper provides detail for possible development of such a program, how it might be implemented, its' costs, advantages and disadvantages. An evaluation of the long-term implications of this alternative, in comparison to the WDOT's proposed $20 billion 20-year highway construction program, is also provided.

### How the Program Might Be Implemented

Vehicle odometer readings would be used to record the mileage driven by Wisconsin residents who voluntarily enroll in the program. To enroll,

people living in one household would drive all their vehicles to a nearby state office building, on a day of their choice (except Sunday), and state staff would read the starting mileage on each vehicle's odometers. After a year, state employees would read the odometers again, and calculate the annual VMT for that household.

The WDOT would issue VMT payments to households having a total VMT during the year below the thresholds identified in Table 1. The payments would be calculated for up to 5 persons in the household. Households over 5 persons would receive no increase in the yearly VMT thresholds or financial rewards.

Program Mechanics

The program would be available only to Wisconsin residents. No exemptions would be given for out-of-state travel, for vacations, or for business use of personal vehicles. People would have to take their travel and business plans into consideration before deciding whether to enroll in the program.

Financial rewards would be given regardless of the total vehicle miles traveled during the preceding year, as long as the annual miles recorded thresholds of Table 1 are not exceeded. For households that already have been meeting the annual threshold limits, the rewards would provide an incentive for the individuals in the household to maintain or reduce their driving even further than the mileage recorded from the previous year.

There would be a small fee ($30/household) to cover the cost of reading the odometers and other administration costs, and to encourage only those households who are likely to earn the incentives to sign up for the program. Households having no vehicles would just need to file the application to enroll in the program, and pay a $10 administrative fee.

Drivers purchasing vehicles during the enrollment period would drive those vehicles to the local state office following the purchase of the vehicle(s) to have the odometers read. The net mileage recorded on the odometers of those vehicles at the end of the year would be added to the total household VMT for the year.

Funding

Taxes would not have to be increased. The VMT reduction incentive funds would come from the $8 billion in fuel taxes and registration fees that would otherwise be used to fund future highway expansion projects over the next 20 years.

Approximately $800 million would be needed annually to reduce Wisconsin's VMT by 25%. Practices people could employ to reduce their individual VMT might include walking more, taking transit more, working at home more, car pooling whenever possible, bicycling more, moving closer to where they normally drive to, planning shopping trips so that travel routes do not overlap, using the Internet more for shopping, choosing recreation sites closer to home. Under the assumption the average household in Wisconsin would earn $400 a year by meeting the low mileage thresholds in Table 1, $826 million from the highway fund would be needed annually.

Consequences of Implementing the Program and Program Termination

The result of many people making the above choices would lower Wisconsin's VMT on the state's highways, reducing the need for costly and environmentally disruptive expansions of state highways. There would be less traffic congestion, and therefore reduced collisions with other autos, stationary objects, bicycles, pedestrians and wildlife. Insurance premiums might be less if the miles an individual drives is significantly reduced, as would be the amount of productively lost while people in Wisconsin are driving cars or stuck in traffic.

The amount of disposable income of Wisconsin residents would increase, not just by the amount of money the households earned by not driving automobiles, but also because people would spend less of their money on automobile driving related costs. Currently, the estimated average out of pocket cost of a household having 2 drivers and owning two automobiles (SOVs) and driving 30,000 miles in a year is $15,000 (based on American Automobile Association (AAA) estimates). By reducing total vehicular driving, households enrolled in the program would realize even more savings throughout the year by reducing their vehicle maintenance costs,

using less gasoline (or less diesel fuel), spending less money on parking fees, etc.

Assuming large public participation in the program, the cost savings of not having to increase the capacity of the highway and municipal street systems in Wisconsin would be dramatic, as would the reduction in highway construction delays, detours and auto-related accidents.

Without the need to accommodate increasing VMTs by expanded highway construction in cities, the urban environment in Wisconsin would become more livable, as there would be lower emissions and auto related noise, and finding a parking space would be easier. It would be safer to walk or use a bicycle to get around. When people do need to drive, it would be more pleasant and less stressful to do so, because there would be less traffic and road construction to contend with.

The environment outside the city would also improve. There would be less traffic and road construction in the country, because fewer people would choose to locate their homes out at considerable distance from where they are employed, or at considerable distances from places they routinely visit. Consequently, the pace of rural land being lost to development would be lessened, preserving the country's agricultural land, natural areas, forests, wetlands, shorelands, and other amenities of the rural landscape that Wisconsin residents want to see preserved from development.

The air in the country would also be cleaner and fresher if there were significant reductions in auto commuting. There might also be less auto collisions in the country, too, because of fewer vehicles traveling on the highways, and there might also be less damage to autos and harm to wildlife.

The consumption of non-renewable fuel supplies, such as gasoline, diesel fuel and oil would also be reduced, and those resources could be saved for future generations. There would also be less greenhouse gases (carbon dioxide) released to the atmosphere, reducing the contribution to global warming.

The program would need to be in operation long enough for people to factor the VMT incentive opportunities into their long term residential and work locations and financial strategies. The 10-year cost of the program would be about the same as the DOT's proposed $8 billion for new highways, except

most of this money would be returned to the public, rather than used in providing additional highway infrastructure.

Consequences of Not Implementing the Program

Not implementing this non-structural alternative to highway development will mean that at least $7.3 billion will be needed for highway expansion between now and the year 2020. Even with this expenditure for additional highway infrastructure, congestion on the Wisconsin highways would continue to worsen (DOT State Highway Plan 2020).

The new highways would be laid over 25,000 acres of Wisconsin land, thus preventing the use of that land for future economic development, for recreation, wildlife, scenic beauty or other amenities of the rural and urban Wisconsin landscape.

The secondary environmental and economic impacts of additional sprawl development in rural areas would be much greater. These impacts are manifested in the rapid population growth of suburbs and surrounding rural areas, at the expense of population declines (and probably declines in job openings) in central cities. In the Midwest region of the U. S., central cities declined 0.3% in population, while their surrounding suburban areas gained 10% (U. S. Bureau of Census, December, 1999).

Adverse traffic and congestion consequences of not implementing this alternative will continue to fall on cities, suburbs, towns and their residents. There will be more traffic everywhere in the state, degrading the environment of urban and rural areas alike, adding significantly to the cost of maintaining state and local roads, streets, and bridges. With the increase in traffic and congestion will come increased auto accidents, impediments to other forms of public mobility (biking, walking, using transit), and additional losses due to people getting sick from transportation caused pollution, as well as the costs associated with more global warming.

Much of the increase in traffic will occur on the arteries to and beltlines around metropolitan areas, because the surrounding freeway systems funnel traffic into these central locations, creating a vortex. Ultimately, the cities and surrounding localities will be unable to keep up with the increases in traffic flow, resulting in gridlock, causing additional losses in economic

productively, reductions in the quality of life, poor health conditions and overall economic decline.

It has been estimated that the time people waste while being stuck in traffic costs America $76 billion each year [Texas Transportation Institute's report: Urban Roadway Congestion (1999)]. The societal cost of providing for the public needs for travel projected by the proposed Wisconsin State Highway Plan is $15 billion annually, or $3,000 for every Wisconsin resident[1]. When added to the proposed highway plan's construction cost of $20 billion, the DOT's proposed State Highway Plan actually entails a $320 billion public cost to Wisconsin residents.

## CONCLUSION

The economic, social and environmental cost of driving has not been a strong enough factor in people's decisions about where to reside, work, go to school and do other personal business. Far too often, people do all three of these at considerable distances apart, requiring that they drive excessively and spend inordinate amounts of time on Wisconsin's highway system. As a result, the VMT per person in Wisconsin has continued to rise since 1970, when it was only 5,870 miles per person, and there were 20% fewer people living in the state.

The average VMT per year now stands at 10,700 miles per person, and growing (15,000 miles per year per licensed driver). The ever increasing motor vehicle use of Wisconsin's highway system consumes vast quantities of energy, time, natural resources, public dollars and human and as well as animal life. The total economic and environmental cost to accommodate the levels of vehicular travel in Wisconsin projected by the State Highway Plan 2020 is estimated to exceed $15 billion, annually, or $3,000 for every state resident.

This paper has identified a new approach for reducing the need for costly new highway development, and for reducing excessive highway use by the public. The approach, for lack of a better term, might be referred to as "negative pricing". In this paper, negative pricing involves providing money saved from not having to build costly new highway capacity infrastructure in the future, and re-channeling that future money saved back to individuals of

[1] Excluding contribution to global warming from accommodating expected increases in vehicle miles traveled in Wisconsin under the DOT's proposed state highway plan.

society who do not overuse the highway infrastructure, in the form of "environmental conservation rewards (ECRs).

## ENERGY CONSERVATION REWARDS

Another potentially worthwhile application of negative pricing, as defined above, might be in the field of energy conservation. Utilities could use negative pricing as an incentive for people to use less energy in heating and lighting their homes and businesses, and for minimizing their uses of other forms of electricity in their daily lives. This could reduce public power demands, reducing the need to build more power plants, transmission lines, fuel lines, etc., in addition to reducing global greenhouse gas emissions that contribute to global warming.

Negative pricing in the energy industry would entail paying financial incentives to households and businesses that minimize energy consumption. Households using significantly low energy per individual could be eligible to receive monetary payment at the end of the year for their low energy use (Table 2). The source of the money to provide the financial incentives would be the projected future money saved by not having to build additional power plants, transmission lines, power stations, and the economic and environmental cost of laying additional gas pipelines. Conservation of the world's supply of fossil fuels would be a secondary benefit of the use of negative pricing in the energy industry.

Increasing highway and energy use is creating significant adverse repercussions for all current and future global inhabitants. Mounting traffic congestion and global warming are very serious international problems, and the problems are worsening day by day.

The provision of ECRs, as defined in this paper, is a potential tool to lessen these problems. It should be considered for adoption and implementation without delay. It is quicker acting, less risky, and better for the natural and human environment than building massive energy and transportation infrastructure, which only serve to accommodate ever increasing demands for expanded highway capacity and power plant production.

**[Signed by Author 2/4/00]**

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**Michael T. Neuman** **Date**

# APPENDIX A: VMT AND ENERGY USE PAYMENT TABLES

Table 1A. Payment Schedule for Low Household Annual VMT – **One Driver**

| Payment | Number of Persons in Household[2] | Yearly VMT Threshold (Miles) |
|---|---|---|
| $2,800 | 1 | 0 |
| $2,800 | 2 | 0 |
| $2,800 | 3 | 0 |
| $2,800 | 4 | 0 |
| $2,800 | 5 | 0 |
| $2,400 | 1 | Less than 1,000 |
| $2,400 | 2 | Less than 1,250 |
| $2,400 | 3 | Less than 1,500 |
| $2,400 | 4 | Less than 1,750 |
| $2,400 | 5 | Less than 2,000 |
| $2,000 | 1 | Less than 2,000 |
| $2,000 | 2 | Less than 2,500 |
| $2,000 | 3 | Less than 3,000 |
| $2,000 | 4 | Less than 3,500 |
| $2,000 | 5 | Less than 4,000 |
| $1,600 | 1 | Less than 3,000 |
| $1,600 | 2 | Less than 3,700 |
| $1,600 | 3 | Less than 4,500 |
| $1,600 | 4 | Less than 5,250 |
| $1,600 | 5 | Less than 6,000 |
| $1,200 | 1 | Less than 4,000 |
| $1,200 | 2 | Less than 5,000 |
| $1,200 | 3 | Less than 6,000 |
| $1,200 | 4 | Less than 7,000 |
| $1,200 | 5 | Less than 8,000 |
| $800 | 1 | Less than 5,000 |
| $800 | 2 | Less than 6,200 |
| $800 | 3 | Less than 7,250 |
| $800 | 4 | Less than 8,750 |
| $800 | 5 | Less than 10,000 |
| $400 | 1 | Less than 6,000 |
| $400 | 2 | Less than 7,500 |
| $400 | 3 | Less than 9,000 |
| $400 | 4 | Less than 10,500 |
| $400 | 5 | Less than 12,000 |
| | | |

[2] The household number is the number of persons living at the same residence during the enrollment year.

Table 1B. Payment Schedule for Low Household Annual VMT – **2 Drivers**

| Payment | Number of Persons in Household | Yearly VMT Threshold (Miles) |
|---|---|---|
| $2,800 | 2 | 0 |
| $2,800 | 3 | 0 |
| $2,800 | 4 | 0 |
| $2,800 | 5 | 0 |
| | | |
| $2,400 | 2 | Less than 1,750 |
| $2,400 | 3 | Less than 2,000 |
| $2,400 | 4 | Less than 2,250 |
| $2,400 | 5 | Less than 2,500 |
| | | |
| $2,000 | 2 | Less than 3,500 |
| $2,000 | 3 | Less than 4,000 |
| $2,000 | 4 | Less than 4,500 |
| $2,000 | 5 | Less than 5,000 |
| | | |
| $1,600 | 2 | Less than 5,250 |
| $1,600 | 3 | Less than 6,000 |
| $1,600 | 4 | Less than 6,750 |
| $1,600 | 5 | Less than 7,500 |
| | | |
| $1,200 | 2 | Less than 7,000 |
| $1,200 | 3 | Less than 8,000 |
| $1,200 | 4 | Less than 9,000 |
| $1,200 | 5 | Less than 10,000 |
| | | |
| $800 | 2 | Less than 8,750 |
| $800 | 3 | Less than 10,000 |
| $800 | 4 | Less than 11,250 |
| $800 | 5 | Less than 12,500 |
| | | |
| $400 | 2 | Less than 10,500 |
| $400 | 3 | Less than 12,000 |
| $400 | 4 | Less than 13,500 |
| $400 | 5 | Less than 15,000 |

Table 1C. Payment Schedule for Low Household Annual VMT – **3 Drivers**

| Payment | Number of Persons in Household | Yearly VMT Threshold (Miles) |
|---|---|---|
| | | |
| $2,800 | 3 | 0 |
| $2,800 | 4 | 0 |
| $2,800 | 5 | 0 |
| | | |
| $2,400 | 3 | Less than 2,500 |
| $2,400 | 4 | Less than 2,750 |
| $2,400 | 5 | Less than 3,000 |
| | | |
| $2,000 | 3 | Less than 5,000 |
| $2,000 | 4 | Less than 5,500 |
| $2,000 | 5 | Less than 6,000 |
| | | |
| $1,600 | 3 | Less than 7,500 |
| $1,600 | 4 | Less than 8,250 |
| $1,600 | 5 | Less than 9,000 |
| | | |
| $1,200 | 3 | Less than 10,000 |
| $1,200 | 4 | Less than 11,000 |
| $1,200 | 5 | Less than 12,000 |
| | | |
| $800 | 3 | Less than 12,500 |
| $800 | 4 | Less than 13,750 |
| $800 | 5 | Less than 15,000 |
| | | |
| $400 | 3 | Less than 15,000 |
| $400 | 4 | Less than 16,000 |
| $400 | 5 | Less than 18,000 |

Table 1D. Payment Schedule for Low Household Annual VMT – **4 Drivers**

| Payment | Number of Persons in Household | Yearly VMT Threshold (Miles) |
|---|---|---|
| $2,800 | 4 | 0 |
| $2,800 | 5 | 0 |
| | | |
| $2,400 | 4 | Less than 3,250 |
| $2,400 | 5 | Less than 3,500 |
| | | |
| $2,000 | 4 | Less than 6,500 |
| $2,000 | 5 | Less than 6,700 |
| | | |
| $1,600 | 4 | Less than 9,750 |
| $1,600 | 5 | Less than 10,000 |
| | | |
| $1,200 | 4 | Less than 13,000 |
| $1,200 | 5 | Less than 13,250 |
| | | |
| $800 | 4 | Less than 16,250 |
| $800 | 5 | Less than 16,500 |
| | | |
| $400 | 4 | Less than 19,500 |
| $400 | 5 | Less than 19,750 |

Table 1E. Payment Schedule for Low Household Annual VMT – **5 Drivers**

| Payment | Number of Persons in Household | Yearly VMT Threshold (Miles) |
|---|---|---|
| $2,800 | 5 | 0 |
| | | |
| $2,400 | 5 | Less than 4,000 |
| | | |
| $2,000 | 5 | Less than 8,000 |
| | | |
| $1,600 | 5 | Less than 12,000 |
| | | |
| $1,200 | 5 | Less than 16,000 |
| | | |
| $800 | 5 | Less than 20,000 |
| | | |
| $400 | 5 | Less than 24,000 |

Table 2. Payment Schedule for Low Household Annual Energy Use

| Payment | Number of Persons in Household | Yearly Energy Use Threshold (therms[3]) |
|---|---|---|
| $2,800 | 1 | 0 |
| $2,800 | 2 | 0 |
| $2,800 | 3 | 0 |
| $2,800 | 4 | 0 |
| $2,800 | 5 | 0 |
| $2,400 | 1 | 100 |
| $2,400 | 2 | 125 |
| $2,400 | 3 | 150 |
| $2,400 | 4 | 175 |
| $2,400 | 5 | 200 |
| $2,000 | 1 | 200 |
| $2,000 | 2 | 250 |
| $2,000 | 3 | 300 |
| $2,000 | 4 | 350 |
| $2,000 | 5 | 400 |
| $1,600 | 1 | 300 |
| $1,600 | 2 | 375 |
| $1,600 | 3 | 450 |
| $1,600 | 4 | 525 |
| $1,600 | 5 | 600 |
| $1,200 | 1 | 400 |
| $1,200 | 2 | 500 |
| $1,200 | 3 | 600 |
| $1,200 | 4 | 700 |
| $1,200 | 5 | 800 |
| $800 | 1 | 500 |
| $800 | 2 | 625 |
| $800 | 3 | 750 |
| $800 | 4 | 875 |
| $800 | 5 | 1,000 |
| $400 | 1 | 600 |
| $400 | 2 | 750 |
| $400 | 3 | 900 |
| $400 | 4 | 1,050 |
| $400 | 5 | 1,200 |

[3] 1 therm = 100,000 BTU

# APPENDIX B: METHODOLOGY

## Formula for Calculation of VMT ReductionThresholds

Formula Used in Creation of Table 1:

Total Household Mileage Threshold/Year

$= x + Dx + Px$

Where x = 1,000 (1…6) miles;

D = Number of Additional Drivers (.75)
P = Number of Passengers (.25)

- After a total of 5 persons in the household is reached, no credit is provided for additional persons residing in the household.

Examples of Applying Table 1 to Individual Households VMT:

1. A household has 2 drivers, one person who doesn't drive, and records 7,600 miles driven in a year on all the registered vehicles in the household. The household would be eligible to receive a $1,200 refund. (Table 1B)

2. A household has 2 drivers, no people who don't drive, and records 4,400 miles driven in a year on all the registered vehicles in the household. The household would be eligible to receive a $1,600 refund. (Table 1B)

3. A household has 3 persons: 2 drivers, and 1 person who doesn't drive. They record no miles driven in a year and have no registered vehicles. The household would be eligible to receive a $2,800 refund. (Table 1 B)

4. A household has 1 driver and 4 persons who do not drive. The driver drives 6,200 miles in a year on his/her registered vehicle. The household would be eligible to receive a $1,200 refund. (Table 1A)

## Potential Amount of VMT Reduction Rebates

Number of Households in Wisconsin = 2,066,064

Assume average Wisconsin household earns a $400 VMT reduction rebate a year.

Annual Rebate Amount: 2,066,064 households X $400 = $826,425,000.
Ten-year Rebate Amount: $8.26 Billion

Money for the rebate is technically not a "cost" since the money is returned to the public. Money planned for highway capacity expansion could be used for the rebate. [**No need to increase taxes nor decrease maintenance and preservation of current highway system.**] Environmental impacts of constructing new highway expansions and accommodating increased VMT on Wisconsin's highways would also be reduced.

Relief of current traffic congestion would begin immediately upon start of the program.

## Comparison to DOT 20-year Highway Expansion Plan Costs

$20 Billion for Highway Rehabilitation, Maintenance and Expansion

- $12 Billion Maintenance/Rehabilitation Improvements
- $ 7.3 Billion Highway Capacity Expansion
- Plus Acceptance of Increasing Congestion on Secondary Roads
- Traffic Congestion Relieve would occur over a 20-year period

Money for highway development is technically a cost. No money is returned to the public. Costs are an underestimate of the true costs since they do not include environmental and social costs of additional highway expansion and increased VMT in Wisconsin on highways and in cities.

Relief of current traffic congestion would be contingent on where the highway expansion would take place, when it is completed, and how long it will take before the new capacity of the facility is reached and another expansion of the highway is necessary.

## Calculation of Societal Costs of the Proposed State Highway Plan 2020

The report "The Real Price of Gasoline" (Center for Technology Assessment, Washington D.C., 1999) estimates that the real cost of gasoline, inclusive of all subsidies and environmental costs [excluding global warming], is at least 15 times the cost of gasoline at the pump ($1 dollar/gallon in 1998).

Fifteen times the average cost for the state highway system over the next 20 year of $1 billion per year is $15 billion. Fifteen billion dollars per year, distributed among 5 million residents of Wisconsin, amounts to $3,000 per resident per year.

## Formula for Calculation of Energy Use Reduction Thresholds

Formula Used in Creation of Table 2:

Total Household Energy Use Threshold/Year

$$= y + Ry$$

Where $y =$ 100 (1…6) therms

R = Number of Additional Residents (.25)

*After a total of 5 persons (residents) living in the household is reached, no credit is provided for additional persons residing in the household.