



The Council of State Governments
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2010 Innovations Awards Application

Deadline: March 1, 2010

ID # (assigned by CSG): **10-MW-18MN**

Please provide the following information, adding space as necessary:

State: **Minnesota**

Assign Program Category (applicant): **Infrastructure and Economic Development**

1. Program Name: **County Road Safety Planning**
2. Administering Agency: **Minnesota Department of Transportation**
3. Contact Person (Name and Title): **Sue Groth, State Traffic Engineer**
4. Address: **1500 West CR B2, Roseville, MN 55113**
5. Telephone Number: **651-234-7004**
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7. E-mail Address: **sue.groth@state.mn.us**
8. Web site Address: <http://www.dot.state.mn.us/trafficeng/safety/index.html>
This is the website for our overall safety program.
9. Please provide a two-sentence description of the program.

The Mn/DOT Road Safety Plan program takes a systematic, data-driven approach to look at all roadways within Minnesota and identify highway safety improvements to reduce the number of fatal and life changing crashes that occur.

10. How long has this program been operational (month and year)? Note: the program must be between 9 months and 5 years old on March 1, 2010 to be considered.

The Road Safety Planning program has been operational since the fall of 2008. Our initial efforts were in Olmstead County, located in the south eastern part of Minnesota. When the demonstration project was successful, Mn/DOT decided to actively pursue the development of Road Safety Plans for every county and Mn/DOT district in the State. An aggressive schedule has the program fully implemented by September 2012.

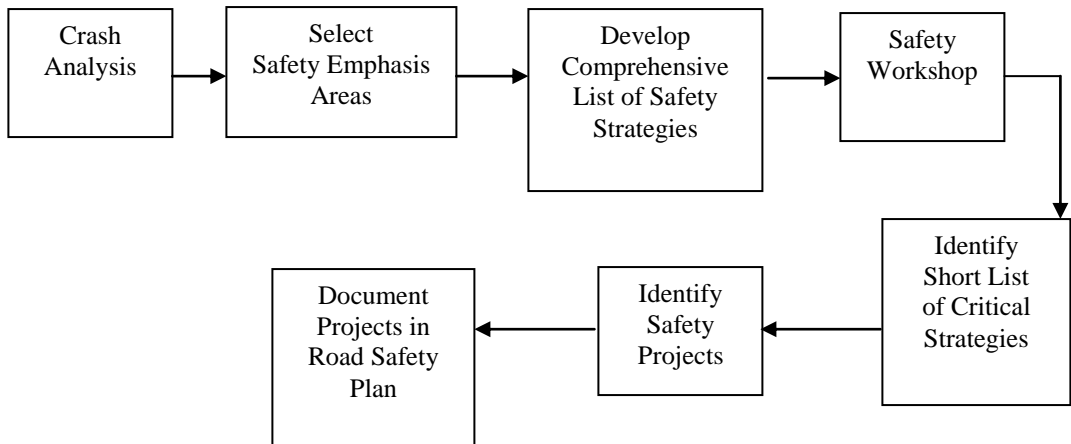
11. Why was the program created? What problem[s] or issue[s] was it designed to address?

Motor vehicle crashes resulting in fatal and serious injuries have a profound impact on those involved, their families and the community as a whole. Traditional analytical techniques have been successful in identifying severely deficient roadways and have led to the elimination of the “dead man’s curve”, or locations with multiple fatal crashes in a short time period, from our roadway network. Unfortunately, in Minnesota we still kill over 400 people on our roadways each year – the Road Safety Plan program was developed to take a systematic look at all roadways within Minnesota and identify highway safety improvements to reduce the number of fatal and life changing crashes that occur.

Minnesota’s Strategic Highway Safety Plan (SHSP) concluded that Mn/DOT needed to revise their approach to highway safety in order to be successful at achieving interim goals to reduce the number of traffic fatalities, and the long term goal of moving the State Towards Zero Deaths (TZD). This traditional approach historically focused the State’s safety resources entirely on Mn/DOT’s system of highways, with most of the funding going for improvements to signalized intersections along urban/suburban arterials. However, Mn/DOT’s data driven analytical process found over 70% of fatal crashes occur in rural areas, and almost 50% of these fatal crashes occurred on the local system of highways concluding that county highways had the highest fatal crash rate of any jurisdiction in the State. As a result, Minnesota’s SHSP includes objectives to actively engage the counties in the safety planning process by dedicating a portion of the State’s safety funds for projects at the county level, including the preparation of county wide safety plans. A similar process and funding stream is also used to actively engage the Mn/DOT staff responsible for the state highway system at each district within the State.

12. Describe the specific activities and operations of the program in chronological order.

With Mn/DOT support and guidance, Olmstead County initiated a county-wide road safety plan in the fall of 2008. In early 2009, after the drilldown of crash data was complete, several safety emphasis areas were identified. Next strategies and countermeasures related to the identified areas were developed for presentation at a workshop. A multidisciplinary group of stakeholders held a one day workshop to discuss the specifics on the types of crashes that were causing serious injuries and fatalities in their county. From this discussion, a short list of critical strategies that could be implemented locally was developed through a collaborative process. The workshop concluded with the prioritization of a short list of infrastructure, policy, and behavioral strategies geared towards mitigating the specific types of crashes responsible for killing or seriously injuring over 200 citizens during the past 5 years in the county. Finally, the critical strategies were matched with the at risk roadways to develop a series of safety projects that are documented in a Road Safety Plan for the county. A flow chart of the process is depicted below.



Based on the positive feedback from a variety of participants in the Olmstead County Road Safety Plan development, Mn/DOT decided to pursue statewide deployment with the remaining 86 counties and eight Mn/DOT districts. The statewide deployment began in September of 2009 and is expected to be completed by September 2012.

13. Why is the program a new and creative approach or method?

This program is unique in several aspects. First, to the best of our knowledge, no similar efforts are occurring anywhere in the United States. We consulted the Federal Highway Administration and other peer agencies throughout the nation and found our Road Safety Plan program is the first of its kind in terms of a coordinated, statewide safety planning process.

Second, Minnesota is one of the few states that share its federal safety funding with local jurisdictions. The intent of the Federal Highway Safety Improvement Program is to focus on the elimination of fatal and severe injury crashes. When Mn/DOT conducted a crash investigation related to the locations of fatal and serious injury crashes, it determined nearly 50% of these target crashes were occurring outside the Mn/DOT highway system and over 70%, regardless of jurisdiction, were occurring on rural roads. Mn/DOT acted on this finding, and now dedicates about 50% of its Federal HSIP funding, approximately \$11 million annually, for local projects specifically targeted at reducing fatal and severe injury crashes, particularly on rural roads.

Finally, the approach towards programming projects for rural crashes is substantially different from traditional approaches used to program safety funds. Historically, large numbers of crashes occurring in close proximity to each other, or black spots, received priority related to safety funding. The identification of these locations was straightforward. However, rural crashes, particularly on the county road system, are dispersed over several miles of roadway network. In Minnesota, a rural county road has a crash density of 0.003 fatal crashes per mile per year. The challenge is trying to determine what the appropriate safety applications are for a 1000 mile roadway network that might have 3 randomly occurring fatal crashes on it each year. This project is using the crash data and roadway data together to identify surrogate measures that increase the relative risk of a fatal or severe injury crash occurring based on the roadway type and historical crashes within each jurisdiction. For example, to date, we have found that curved roads are less safe than straight roads. Our data analysis shows the length and sharpness (i.e., radius) of a curve, an intersection within a curve, the number of vehicles traveling through the curve using the road on an average day, and the presence of a visual trap (i.e., seeing a tree line adjacent to the road going straight while the roadway curves) all have a positive correlation to a fatal or severe injury crash occurring. Similar measures have also been developed for intersections. This approach is substantially different to assessing the relative safety of a roadway based solely on the presence of a crash occurring. However, with the vast mileage of rural roads and the substantial number of fatal and severe injury crashes occurring on these specific types of roadways, Mn/DOT feels this new approach is the best way to identify and program projects that have the potential to save people's lives and prevent serious injuries.

14. What were the program's start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.)

The start up costs for this program were minimal. A \$50,000 grant was awarded to one county in the state to participate in the beta version of the structure/process identified by Mn/DOT staff, and developed in collaboration with vendors engaged in providing professional support to the Department. The program is staffed by two professional engineers who dedicate 50% of their time to managing and participating in the process. A professional/technical contract was awarded to a successful applicant through an advertised RFP.

Currently, the Mn/DOT Office of Traffic, Safety and Technology managing this effort has approximately 10 staff members assigned to provide functional support. This includes 5 professional engineers and 5 technicians. These staff are very familiar with the technical details associated with the crash records and transportation database.

15. What are the program's annual operational costs?

The estimated budget for this effort is \$4 million over a 4 year period, approximately \$42,000 for each county or district specific plan.

16. How is the program funded?

The funding for this program is coming from a federal highway dollars that the State is obligated to spend on Highway Safety Improvements.

17. Did this program require the passage of legislation, executive order or regulations? If YES, please indicate the citation number.

No

18. What equipment, technology and software are used to operate and administer this program?

The Minnesota Crash Mapping Analysis Tool (MnCMAT) and the Transportation Information System (TIS) are two pieces of software integral to performing the analysis used to produce the detailed drilldown of crash data.

MnCMAT is a crash mapping tool that assists local agencies in conducting crash analysis through a custom developed GIS framework. TIS is Mn/DOT's computer system that houses statewide crash data, as well as detailed information on most roadways within the state. Together these two tools are instrumental in identifying the characteristics (described above) associated with fatal and severe injury crashes.

19. To the best of your knowledge, did this program originate in your state? If YES, please indicate the innovator's name, present address, telephone number and e-mail address.

Yes. The concept originated within Mn/DOT's Office of Traffic, Safety and Technology (OTST) and the Office of State Aid for Local Transportation (SALT) with input from professional staff from CH2M Hill, Inc.

OTST Contact:

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SALT Contact:

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CH2M Hill Contact:

Howard Preston, 1295 Northland Drive Ste 200, Mendota Heights, MN 55120
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20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ?

No

21. Has the program been fully implemented? If NO, what actions remain to be taken?

No. Implementation is currently underway; however the program is not fully implemented at this time. To date, we have completed 3 Road Safety Plans and expect 22 additional plans to be completed this calendar year. Ultimately, 95 plans will be developed by September 2012. We have established a robust, flexible process and procedures to meet the needs of all counties and Mn/DOT districts within Minnesota. We do not expect any barriers to full implementation of this program.

22. Briefly evaluate (pro and con) the program's effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples.

Until recently, Mn/DOT utilized a traditional black spot approach that tended to program safety projects where high concentrations of crashes occurred. Unfortunately, this approach did not produce any meaningful reductions in total traffic crashes, injuries or deaths. From 1982 through 2004, the total number of crashes consistently ranged between 90,000 to 105,000 crashes and 500 to 600 fatalities annually. Since 2005, when the TZD initiative was beginning in Minnesota, the total number of crashes and fatalities has dropped to less than 80,000 and 400 crashes, respectfully. While this reduction is likely due to several factors, we believe our focus on mitigating fatal and severe injury crashes is at least partially responsible for the recent declines.

Some professionals still believe the traditional measures used to evaluate the relative effectiveness of roadway safety are appropriate and this new methodology will be simply a phase that will run its course. The challenge is to convince these naysayers to accept a new performance measure for fatal and serious injury crashes, and focus dedicated funding to specifically mitigate these situations. Traditionally, most traffic engineering projects involve some element of safety; whether it is adding turn lanes to signalized intersections, signing high risk curves, or paving shoulders and installing rumble strips, there are elements of safety that can be realized in every project. Taking a component of funding and specifically creating stand alone safety projects focused on fatal and severe injury crashes can be a difficult sell when the safety culture has embraced incremental components of safety through its day to day operations; however, the statistics above have helped sell the program to the skeptics.

23. How has the program grown and/or changed since its inception?

Since we are early in the deployment of the Road Safety Plan program, we have not made substantial changes since our initial roll out. The minor changes that have occurred include leveraging some economies related to conducting a stakeholder workshop. Minnesota has several counties that are rural in nature; with some counties not having a city with a population over 5000 people. In these instances, we have encouraged counties to partner up with their neighbors to reach a critical mass needed to effectively vet the countermeasures and strategies appropriate for their communities. While there are some risks with approaching the workshops in this manner, it was determined through crash data that, in general, most crash characteristics are similar for adjoining counties -

especially if we look at the roadway elements contributing to fatal and severe injury crashes.

24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program?

The challenges other states might expect to encounter are related to traditional approaches used to identify unsafe roadways. Relying on traditional measures to identify “black spots” on rural roadways will lead to the conclusion there is nothing that can be done to improve safety on the rural roadway system. However, if we focus in on the distribution of fatal and severe injury crashes occurring on our roadways, most states will find a substantial portion of their crashes are occurring on rural roads. Developing a new analytical technique is difficult, and we made our first attempt – we expect the technique to be scrutinized, modified, and improved as more data, research and discoveries occur. However, simply doing nothing until a robust, proven technique has been developed is not commensurate with moving forward to improve roadway safety or the vision of the TZD efforts underway in Minnesota. Finally, in the current economic climate, states may find it difficult to redistribute the financial resources based on the distribution of crashes when considering the jurisdictional ownership of the roads where fatal and severe injury crashes are occurring. The development of our Road Safety Plan program is backed by a fixed amount of federal funding which we distribute to allow the implementation of projects identified for road safety success across Minnesota.



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2010 Innovations Awards Application Program Categories and Subcategories

Use these as guidelines to determine the appropriate *Program Category* for your state's submission and list that program category on page one of this application. Choose only one.

Infrastructure and Economic Development

- Business/Commerce
- Economic Development
- Transportation

Government Operations and Technology

- Administration
- Elections
- Information Systems
- Public Information
- Revenue
- Telecommunications

Health & Human Services

- Aging
- Children & Families
- Health Services
- Housing
- Human Services

- Education
- Labor
- Management
- Personnel
- Training and Development
- Workforce Development

Natural Resources

- Agriculture
- Energy
- Environment
- Environmental Protection
- Natural Resources
- Parks & Recreation
- Water Resources

Public Safety/Corrections

- Corrections
- Courts
- Criminal Justice
- Drugs
- Emergency Management
- Public Safety

Human Resources/Education

Save in .doc or rtf. Return completed application electronically to innovations@csg.org or mail to:

CSG Innovations Awards 2010
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Contact:

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This application is also available at www.csg.org.