



Research Services Section  
Mail Stop 330, 395 John Ireland Boulevard  
St. Paul, Minnesota 55155 (phone: 651-282-2274)

## LRRB RESEARCH PROBLEM STATEMENT \* \* SUBMITTAL FORM \* \*

Please mail, email or fax to Alan Rindels, [alan.rindels@dot.state.mn.us](mailto:alan.rindels@dot.state.mn.us) / 651/297-2354

Research

Implementation

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**Date:** 8/15/2006

**Contact Person(s):** Marcus Hall

**Address:** St. Louis County Public Works Department, 4787 Midway Road, Duluth, MN 55811

**Email:** hallm@co.st-louis.mn.us

**Phone / Fax #:** (218) 625-3838

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**I. Title (Be brief yet descriptive):** Optimizing the Snow Plowing System for Man Power

**II. Problem (Clearly & concisely describe the problem):**

MN/DOT uses a split shift approach to managing their snow plow crews. How effective is that system vs. the counties traditional approach to plowing? Can the state or counties increase their efficiency in snow removal by following other approaches?

**III. Research you propose (State how you see the research to be done):**

Research approaches to snow plowing state and county's roads, evaluate various techniques to prioritize the snow removal of the highway system based on road usage, weather patterns, and man power. And optimize the system for plowing public highways.

Research commercially available software which can be used by the state and county to optimize their snow plow removal. Purchase the software, and demonstrate the effectiveness of the techniques developed from this research for two counties in Minnesota for a snow plowing season.

**IV. If research is successful, what are the potential benefits?**

With the price of fuel increasing, developing a system to optimize snow plowing for Minnesota highways seems prudent for the taxpayer, and will result in cost savings to the state and counties.

**V. In general, what would have to be done to gain the benefits from these research results?**

If the approach is reasonable, the approach will be rolled out to other counties using the snow and ice program of LTAP.

**VI. Qualified Researcher(s):**

**Name:**

Prof. Diwakar Gupta

Prof. Lisa A. Miller

**Phone/Address:**

Univ. of Minnesota, Mechanical Engineering

Univ. of Minnesota, Mechanical Engineering

**VII. Project Review (Recommended people to review a research proposal on this topic):**

**Name:**

Marcus Hall

Norm Ashfield

**Phone/Address:**

St. Louis County

Mn/DOT Metro Maintenance



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**VIII. Key Words (List of descriptive key words to assist in a literature search):**

Snow plowing, optimization, man power, weather patterns.

**IX. This is a (design, construction, maintenance/operations, environmental compatibility)  
problem. (circle one)**