The 2013-2014 winter was particularly severe for much of the country. The resulting shortage of road salt supplies had a negative impact on winter maintenance operations that year and led to increased demand and higher prices the next year.

Need for Research
Road salt is mined to anticipate typical seasonal usage, which reduces costs by minimizing storage and waste related to overproduction. A consequence, however, is that there are limits to how quickly production can be increased to respond to an unusually harsh winter. As a result, road salt users need to stretch available supplies by finding ways to use less.

The administrator of the Federal Highway Administration (FHWA) initiated this research to synthesize best management practices (BMPs) for procuring, storing and applying road salt. These BMPs are intended to help winter maintenance agencies meet performance goals at the lowest possible cost by increasing efficiency at all phases of the salt usage process. Additionally, minimizing salt usage by effective application will minimize environmental and infrastructure impacts as well as vehicle corrosion.

Through its collaboration with Clear Roads, FHWA contributed significant funding and technical knowledge to this research project.

Objectives and Methodology
Researchers gathered information about road salt BMPs through a literature review and interviews with practitioners, including representatives of 23 state departments of transportation as well as two city winter maintenance agencies.

Both the literature review and interviews focused on three areas: bidding and procurement, storage and application. Several interview subjects provided copies of bidding documents, specifications and contracts.

Researchers synthesized the information into a manual of BMPs for road salt in winter maintenance.
in cold temperatures when salt becomes less effective, utilizing accurate weather forecasting, setting appropriate levels of service and offering training programs that include classroom and hands-on training.

Novel ideas for storage facilities that may be appropriate for some agencies include regional storage facilities that serve multiple agencies, facilities with multiple entrances and exits, and remote facilities where operators can load trucks without coming to the main yard.

The guide also includes a brief overview of the procedures necessary to obtain federal reimbursement after storms that are severe enough to be declared disasters, and a flowchart to help users determine situations where anti-icing is likely to be effective.

Benefits and Further Research

The manual describes each BMP on a single page, front and back. Researchers organized it this way so that information about each BMP could be separated from the manual and shared with relevant personnel or placed in a break room so staff could review and consider the information in an easy-to-understand format.

In many cases, these best practices are known but not universally implemented. Clear Roads hopes that providing salt management BMPs in a highly accessible manner will help prompt winter maintenance professionals to evaluate and implement them where they have potential to improve winter maintenance practices. Additionally, some agencies are already incorporating this manual into their training programs.

The handbook is really well organized. Hopefully agencies will use it to look at their practices, both operationally and in planning and procurement, and see what they can do to create a more effective system."

Project Champion Tim Peters
Illinois Department of Transportation
tim.peters@illinois.gov