



**Department of Public Safety,
Minnesota's Preparedness
for an Oil Transportation
Incident**

January 15, 2015

About this report

Under legislation passed in 2014, the commissioner of public safety is required to submit a report on emergency response preparedness for incidents involving transportation of oil. The legislature identified several required elements for the report (Laws of Minnesota, 2014, chapter 312, article 10, section 11, subdivision 1). As specified by the legislation, the report must (at minimum):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2 [an evaluation of response preparedness and funding to be completed by January 2017];
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

The Department of Public Safety (DPS) contracted with Minnesota Management & Budget's division of Management Analysis & Development (MAD) to conduct research and develop recommendations for DPS's consideration. DPS used funds from the Railroad and Pipeline Safety Account for this study.

MAD is Minnesota government's in-house fee-for-service management consulting group. MAD is in its 30th year of helping public managers increase their organization's effectiveness and efficiency. MAD provides quality management consultation services to local, regional, state and federal government agencies and public institutions.

This report was submitted as required on January 15, 2015 to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation and public safety policy and finance.

This report is structured by topic area; legislative requirements addressed by each section are highlighted at the beginning of each section.

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Executive Summary

Purpose of Study, Scope, and Methods

In 2014, as part of a comprehensive bill on railroad and pipeline safety, the Minnesota Legislature directed the Department of Public Safety (DPS) to prepare a report on incident preparedness in both the public and private sectors related to transportation of oil by rail or pipeline.

DPS's Division of Homeland Security and Emergency Management (HSEM) contracted with Management Analysis & Development (MAD) to draft the report and develop recommendations for DPS's consideration. The legislation specifies that the report must (at minimum):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
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- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2 [an evaluation of response preparedness and funding to be completed by January 2017];
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

Study Scope

Given the legislative direction, this study focuses on **public safety preparedness and response to an oil transportation incident involving railroads or pipelines in Minnesota**. The study does not provide analysis or recommendations on prevention activities, environmental mitigation and clean-up, infrastructure development (such as transportation or health system infrastructure), or relative merits of different modes of oil transportation.

Methods

MAD developed a research plan with DPS and conducted research for this study from August 2014–December 2014. MAD used several data sources to provide responses to the legislative requirements:

- Review and analysis of information on state and federal laws, state and federal agencies, approaches developed by other states and provinces, and research, analysis, and guidance from experts in the field of emergency preparedness and response. MAD conducted a focused literature review using research databases, government reports, public websites, and information from interviewees.

- Comprehensive interviews with subject matter experts, including rail and pipeline company representatives, state agency representatives, and associations of first responders and local governments.
- A survey of fire department chiefs, sheriffs, police department chiefs, and emergency managers in jurisdictions that are potentially affected by an oil transportation incident.
- Focused interviews with state and local elected officials in areas potentially affected by an oil transportation incident.

Findings and Recommendations

Key Findings

Background

Oil and other hazardous materials incidents are one of many risks in Minnesota—other threats, risks, and hazards are also of serious concern to emergency management officials. Oil is transported across Minnesota via rail and pipeline routes that cross large parts of the state; almost any area of the state could be directly or indirectly affected by an oil transportation incident. In recent years, there have been relatively few hazardous materials or oil transportation incidents in Minnesota.

Oil transportation has become a salient issue in Minnesota and elsewhere for several reasons: increased production and distribution of oil from North Dakota and Alberta; catastrophic incidents involving rail and pipeline transport of oil, particularly recent derailments and fires involving shale oil from the Bakken fields; and findings from federal regulators that Bakken crude oil is highly volatile.¹

Community stakeholders, including emergency management officials, elected officials, and the public, have expressed their concerns about rail transportation at community forums in recent months; public safety aspects of oil transportation incidents are among their concerns. That said, focused interviews with elected officials as a part of this study indicated that **constituents as a whole may not view preparedness for a possible oil transportation incident as a significant issue, given other priorities in their communities.**

Minnesota's Preparedness and Response Framework

Minnesota takes an all-hazards approach to emergency preparedness: state and local planners consider potential threats, risks, and hazards and plan accordingly.

Under state and federal law, **Minnesota has a comprehensive framework that would apply to an oil transportation incident.** Railroad and pipeline companies are ultimately responsible for responding to an emergency involving the substances they transport, but local first responders and state agencies also play a role.

Minnesota's statutory framework places **an emphasis on coordination and collaboration** across governments and sectors.

¹ North Dakota is expected to implement new standards aimed at reducing the volatility of Bakken crude oil in 2015.

New statutory provisions established in 2014 outline specific responsibilities for rail companies that transport crude oil, including established response times and requirements to provide training to local responders; **these provisions do not apply to pipelines.**

Minnesota’s Capacity to Respond to an Oil Transportation Incident

Capacity to respond to protect public safety in an oil transportation incident involves a combination of components, including equipment, trained personnel, emergency plans, mutual aid agreements, and exercises to test preparedness.

Private Sector, State, and Regional Resources

Rail and pipeline companies maintain that they are ready and able to respond to an oil transportation incident, noting that they have their own firefighting and spill response resources in Minnesota and other states and have contractual relationships with other responders. Though companies identified specialty firefighting resources in their equipment and contractor lists, much of the resources described by companies are focused on an environmental response to an oil incident.

HSEM coordinates hazardous materials regional response teams that can provide assistance in an oil transportation emergency.² The state has 10 Chemical Assessment Teams in Minnesota. These teams have trained personnel and specialized equipment to assist local incident commanders in recognizing and identifying a hazard so local responders can respond appropriately. The state has two Emergency Response Teams that can take additional mitigation action to protect communities from the effects of an oil or other spill.

State agencies, including DPS, the Minnesota Pollution Control Agency (MPCA), and the Minnesota Department of Transportation (MnDOT) can **provide expert advice to local governments** if there is a hazardous materials or oil transportation incident. If environmental clean-up is needed because of a spill, MPCA would ensure that the responsible party takes necessary action.

Local Resources

The local government mutual aid infrastructure in Minnesota is well-developed, and most counties and cities have all-hazard emergency plans that would apply to an oil transportation incident. First responders surveyed for this study, however, are **relatively unfamiliar with private sector resources and regional response team resources.**

Experts consulted for this study indicated that **local governments generally do not have the equipment or personnel to respond to a significant oil transportation incident**, such as a large spill or fire. Some emphasized, however, that **local governments are not the primary responsible party for an oil transportation incident—the rail or pipeline company is responsible.**

First responders reported access to some types of firefighting and spill response equipment locally or through mutual aid agreements. Information resources—such as information on train and pipeline

² This regional approach to hazardous materials response was developed in the early 1990s with the realization that local governments would not be able to maintain capabilities (particularly trained staff) to respond to a significant incident.

contents and expert advice on appropriate response actions—were available to most first responders surveyed, but not to all.

About half of the first responders surveyed reported that their departments have staff members who have received training on how to respond to an oil transportation incident, and only about one-third indicated that they had participated in a preparedness exercise since July 2013.

Developing Minnesota’s Capacity to Respond to an Oil Transportation Incident

MAD analyzed information from the survey of local first responders, interviews with experts, and other research to identify areas for development.

Perceptions of preparedness

As a whole, first responders surveyed for this study rated their area’s preparedness for an oil transportation incident as below moderate (2.6 on a 1 to 5 scale). None of the responders rated their area’s preparedness as excellent.

Analysis of data from the first responder survey provides support for a common-sense emergency management perspective—organizations that are familiar with hazards and aware of resources; that engage in planning, training, and exercise; and that have resources available to respond will consider themselves to be better prepared for an incident. Further, **a combination of planning, training, and preparedness exercises is a better predictor of high perceptions of preparedness than availability of resources.**

Training

Many of the experts MAD interviewed indicated that **additional training is essential for responder preparedness**, and survey information indicates that training and preparedness exercises increase perceptions of preparedness.

The relatively low level of awareness and familiarity reported by first responders surveyed indicates that awareness-level training is necessary.

Awareness-level training is the first step, but additional training will be necessary. Interviewees described several important components of training: situation assessment (including when to evacuate and when to let the fuel burn itself out), understanding of resources available from the private sector and regional teams, and training and exercises that are connected to the local government’s emergency operations plan.

Many interviewees described challenges with training first responder personnel, including challenges associated with sending staff or volunteers to training when they are needed at work. Some rail and pipeline companies indicated that they have had inconsistent or poor attendance at training sessions they have offered to local responders in recent years.

Interviewees said that training for all first responders (not solely firefighters) is important.

Additionally, some interviewees emphasized that members of the public and elected officials should develop more awareness of oil and hazardous materials risks and of emergency management generally.

Equipment

The majority of first responders surveyed said they did not know what additional equipment or resources are necessary to respond to an oil transportation incident. The relatively few that did provide information regarding additional resources generally said they needed firefighting foam and related equipment.

Experts from a variety of perspectives agree that in some circumstances, the appropriate response to a significant oil fire is to let the fire burn out or down considerably before attacking the fire. The correct public safety response in that situation is to clear the area, take defensive and mitigation actions as possible to prevent property and environmental damage, and consider whether evacuation is warranted. For this reason, **interviewees often warned against focusing on procuring equipment as a means of increasing preparedness.** Additionally, some experts discussed the lessons communities have learned through other large-scale efforts at increasing preparedness through purchasing equipment—the equipment may not be used frequently, and local governments must maintain the equipment and continuously train staff on its use.

Some surveyed first responders offered the suggestion that regional or multi-county agreements regarding equipment (and personnel, in some cases) would help increase preparedness, and the majority of state, local government, and responder associations advised that **identifying and sharing resources is the best approach.**

Coordination and Collaboration

Coordination and collaboration are significant areas for capacity development. Survey questions regarding familiarity and mutual aid agreements revealed a **need for improved connections between first responders, private companies, and state agencies.** A few interviewees indicated that more collaboration and coordination are key to preparedness; **adding resources without coordination would not be helpful.**

The state's emergency preparedness framework encourages collaboration, but there are currently no state-adopted templates or other resources for forming groups that would prepare for and respond to an oil transportation incident. A few areas in Minnesota have Community Awareness and Emergency Response (CAER) organizations or similar groups, but these vary widely.

Changes underway to enhance preparedness

The 2014 legislation provided direction and funding to state agencies to enhance preparedness. MPCA has reviewed railroad company response plans and results of desk drills and is communicating with railroad companies. HSEM is coordinating and conducting awareness-level training across the state for local first responders.

Funds for enhancing preparedness

The established Railroad and Pipeline Safety Account will allow expansion of preparedness efforts. A new Emergency Response Team has been formed in Moorhead, and MPCA and HSEM are engaged in preparedness activities (described above). Deducting statutorily established expenditures, the fund is expected to have a total of approximately \$8,500,000 through June 30, 2016. The funds available in the Railroad and Pipeline Safety Account would—while the account is funded—support a preparedness

effort larger than the state's regional plan review program but smaller than the state's comprehensive nuclear preparedness program.

Most interviewees recommended increasing training as a priority for resources, including making it easier for local responders to attend training and participate in exercises, offsetting the costs of running simulations and drills, expanding the limited number of available trainers in state agencies, and ensuring that the training program can be sustained over time. **A few interviewees recommended caution and prudence in expanding funding,** urging changes underway currently (particularly regarding training) be given time to work.

It was not feasible to develop specific assessments of costs for training and equipment for local first responders to be prepared for an oil transportation incident. Local first responders and emergency managers are in the best position to assess their own capacity, but they do not have sufficient information to identify what additional resources are available and needed to respond to an oil transportation incident. Counties and regions in the state are currently engaged in capability assessment for their emergency management programs. When planners and first responders are more fully aware of the risks of oil transportation incidents and resources available, the capability assessment information will provide a basis for a comprehensive assessment of costs and needs.

In the interim, a means of using the funds from the Railroad and Pipeline Safety Account is necessary. **A regional approach to funding requests would encourage cross-jurisdiction and cross-sector collaboration,** and an emphasis on training would address many of the issues raised by participants in this study.

Evaluating Response Preparedness

Subject matter experts and research literature consulted for this study indicate that there are great difficulties associated with evaluating preparedness for an oil transportation incident or other emergency. Plan review, exercises, and drills are primary ways to check an organization's or area's preparedness, but these activities alone would not allow the state to know if recent changes and enhancements to preparedness were having an impact.

A Results-Based Accountability approach can provide measures to evaluate a program by generating responses to three basic questions: *How much did we do? How well did we do it? Is anyone better off?* Using this approach, MAD developed preliminary performance measures for evaluating preparedness, but these should be vetted by subject matter experts and other stakeholders before they are adopted.

Other issues

Several concerns were identified by participants in this study that are beyond the scope of this report but may warrant additional attention or research, such as transportation infrastructure and health system preparedness. Many participants discussed the importance of preventing or mitigating an oil transportation incident by improving tank cars and tracks, routing pipelines and rail routes away from population centers and environmentally sensitive areas, or allowing rail companies to have their own law enforcement personnel in Minnesota. Participants familiar with the health system emphasized the need for additional planning for incidents involving casualties and described potential problems associated with the limited number of dedicated burn beds in Minnesota.

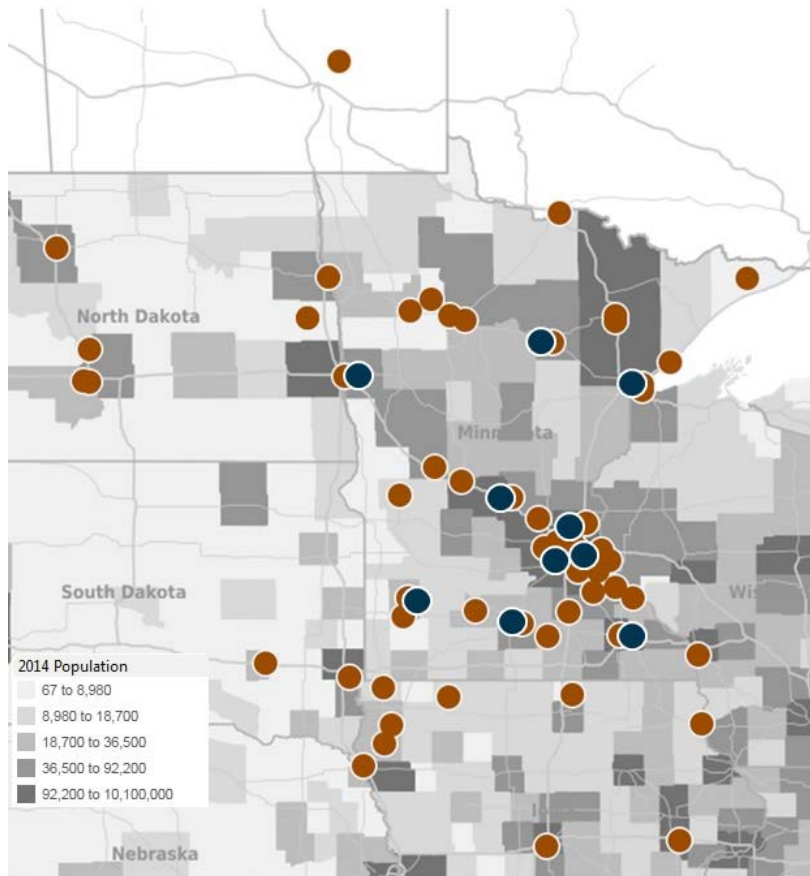
Selected Figures

The map and charts below are reductions of figures from the full report.

Response Resources—Private Sector Resources and Hazmat Regional Response Teams (CAT/ERT)

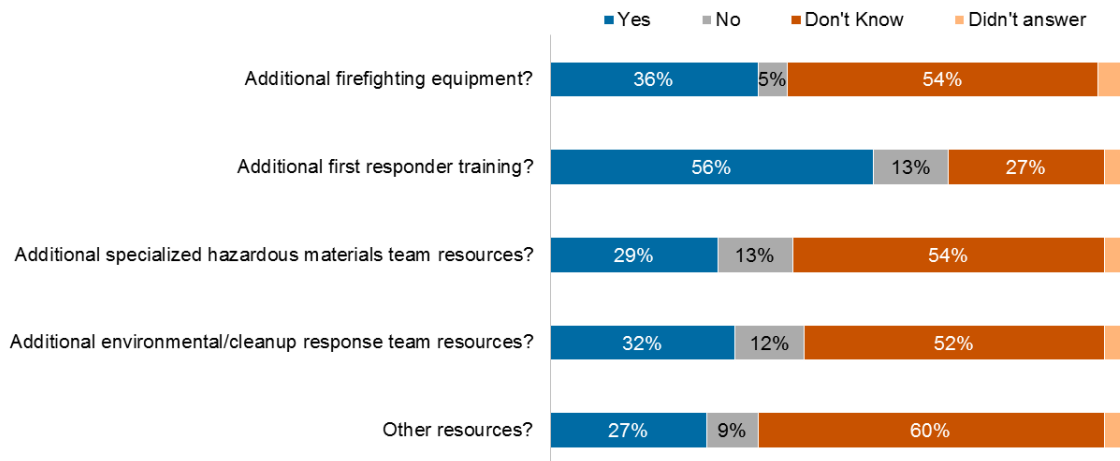
Orange dots represent private sector resources. Blue dots represent hazmat regional response teams.

Full-sized map on page 59.



Most first responders indicated they do not know what additional resources are needed to respond to an oil transportation incident

Full-sized version on page 74.



Awareness and familiarity regarding oil transportation and response resources among first responders

Descriptions of scores and full-sized versions of charts are on page 69



First responder planning, training, and exercises regarding oil transportation

Descriptions of scores and full-sized versions of charts are on page 71



Resources to respond to an oil transportation incident locally or through mutual aid agreements

Descriptions of scores and full-sized versions of charts are on page 72



Recommendations and Intended Actions

DPS has considered the developmental needs identified in this report, and proposes the following recommendations and actions to develop Minnesota's preparedness for an oil transportation incident. DPS intends to **leverage existing organizational structures, programs, and resources to accomplish the goals of the 2014 legislation while also building the state's all-hazard preparedness.**

Recommendation/Intended Action 1: Increase awareness about oil transportation incidents, then develop additional capacity

DPS intends to direct HSEM to engage in a comprehensive approach to expanding awareness about oil transportation incidents, to include:

- Conducting the awareness-level training already underway for fire departments and other responders.
- Developing online resources for the public and first responders, such as awareness materials and training videos.
- Developing guidance for first responders and local governments on responding to an oil incident, including assessment and evacuation protocols.

This **initial focus on building awareness more consistently across the state should be augmented by plans for large-scale drills and hands-on training** for those jurisdictions that are prepared for those activities. Ultimately, DPS recommends expanding the state's training program to support more hands on training and exercises related to emergency preparedness in general.

Recommendation/Intended Action 2: Connect funding for training and equipment to regional coordination

DPS recommends that resources from the Railroad and Pipeline Safety Account be used first to support the training program underway at the state level. Local emergency managers are in the best position to assess their area's capabilities and needs, but many need additional information about risks and available resources related to oil transportation incidents. Additionally, DPS agrees with the findings in this study related to the need for increased coordination and collaboration.

DPS therefore intends to direct HSEM to **develop a process for organizations to apply for training or equipment funding available in the Railroad and Pipeline Safety Account. Requirements for funding should include the formation or expansion of a multi-county or regional collaborative group to identify and share resources.** Wherever possible, existing organizations, joint powers authorities, or public/private partnerships should be utilized. Additionally, funding requests should include descriptions of intended evaluation methods.

To support the formation of these collaborative groups, **agencies participating in the State Agency Responders Committee (particularly DPS and MPCA) should develop guidelines, model charters,**

and other templates.³ These state agencies should also develop a recommended evaluation format for these groups to use.

Because the information from these groups will be valuable in the state's planning and preparedness efforts, DPS intends to investigate the possibility of reimbursing members of these groups under state statutes regarding advisory boards.

DPS intends to direct HSEM to administer funds in a similar way as HSEM grant programs, with established regional advisory committees as the funnel for applications.

Based on the information in this study, DPS recommends that funding priorities be set in this order: training (including reimbursement for associated staffing costs); planning and coordination; and equipment that will most likely be used by first responders during an oil transportation incident, such as air monitoring equipment. Applications for funding for large-scale response equipment should include a rigorous assessment of local and regional resources and risks.

As noted in the Background Section of this report, recent developments in North Dakota regulations may result in a less volatile product being shipped in Minnesota. Private companies and regulators at the state and national level are engaged in additional prevention efforts. The **regional and community-based approach described here will allow first responders to examine the risks in their communities in light of new information.**

Recommendation/Intended Action 3: Delay significant changes to the Railroad and Pipeline Safety Account and related allocations

DPS recommends that the funding allocation and assessment be maintained as-is until the next report required under the 2014 legislation. At that time, there will be more information regarding the state's preparedness efforts and the impact of the changes underway. **Future funding determinations should ensure that preparedness efforts are sustainable—for example, funding for the new emergency response team will lapse at the end of Fiscal Year 2017.**

DPS further intends to direct HSEM to prepare and publicize a plan for use of the funding allocated under Minnesota Statutes 2014 §299A.55, using information from this report and initial assessment of training efforts underway, as well as input from the Fire Services Advisory Committee and the Technical Advisory Committee.

Recommendation/Intended Action 4: Develop a state-level program evaluation approach to assess hazardous materials preparedness activities

In order to effectively evaluate the state's actions under the 2014 legislation, DPS recommends that the state develop a program evaluation process and framework for hazardous materials incident preparedness. **Agencies participating in the State Agency Responders Committee (particularly DPS and MPCA) should jointly develop a list of priority results for preparedness activities and establish timelines and measures to show progress towards these results.**⁴ DPS recommends that information

³ The League of Minnesota Cities Insurance Trust may be a useful resource in addressing concerns about liability. Chemical Assessment Teams and Emergency Response teams should also be consulted for ideas for ensuring that these groups are aware of resources they can provide in an incident.

⁴ The Results-Based Accountability approach could be useful in this effort.

on these results be incorporated in the annual report to the legislature on hazardous materials and oil discharge readiness.

DPS recommends that these state agencies also agree to collect and share data as needed under the evaluation process, and the agencies jointly request railroad companies provide a report on their coordination efforts required under Minnesota Statutes §115E.042.

DPS further recommends that resources from the Railroad and Pipeline Safety Account be used to partially offset any costs of evaluation, with the remaining costs shared equally among the responder agencies.

Recommendation/Intended Action 5: Enhance existing databases (or develop new databases) to provide more comprehensive information about response resources across the state

DPS intends to direct HSEM to identify whether its existing resource database system can be modified to **include additional information regarding resources from state agencies, private sector organizations, and local governments**, including but not limited to resources needed to respond to an oil transportation incident. The existing database is accessible to the Minnesota Duty Officer and to local government first responders.

DPS intends to direct HSEM to gather information from railroad and pipeline companies regarding resources and their contractors' resources to populate the database. HSEM should develop a set of categories for response equipment and resources to ensure consistency.

As an interim step while the database is being developed, DPS intends to direct HSEM to compile the information regarding private sector resources and provide it to local governments on its secure network to aid local first responders in their planning efforts.

If it is not feasible to utilize existing systems, DPS will work with the Minnesota Geospatial Information Office (MnGEO), other agency partners, and private sector advisors to develop mapping and database capabilities and to determine what funding may be needed to support database development and maintenance.

Recommendation/Intended Action 6: Establish Standards for Pipeline Preparedness and Response

For local and state government to be able to determine what resources may be needed to develop response capacity to an oil transportation incident, it will be necessary to determine if rail and pipeline companies are adequately prepared to respond. The most concrete ways to evaluate preparedness are to examine an organization's written plan against established criteria and to test the organization's preparedness through exercises or drills. **The new requirements for rail companies will allow the state to examine rail preparedness efforts, but pipeline companies do not have similarly well-defined responsibilities.** Pipelines also transport significant quantities of potentially dangerous material in Minnesota, so additional attention to pipeline preparedness is warranted.

DPS recommends that the state **adopt response standards, including timelines, for pipeline companies that are similar in scope and content to the response standards applicable to railroads.**

DPS has not developed a position regarding the appropriate response times for pipeline companies, but will participate in the legislative process as requested.

Introduction

Purpose of Study

Oil is transported across Minnesota via rail and pipeline; some of this oil is refined at one of two Minnesota refineries, but most continues on to other states. Several factors have combined to lead to additional scrutiny on oil transportation: the increased production of oil from North Dakota's Bakken Shale formation, increased demand for pipeline capacity across the country, and high-profile crashes and spills of oil in transit via rail or pipeline.

In 2014, as part of a comprehensive bill on railroad and pipeline safety, the Minnesota Legislature directed the Department of Public Safety (DPS) to prepare a report on incident preparedness (in both the public and private sectors) related to transportation of oil by rail or pipeline.⁵

Kris Eide, the Director of DPS's Division of Homeland Security and Emergency Management (HSEM), contacted Management Analysis & Development (MAD) to draft the report and develop recommendations for DPS's consideration. The legislation specifies that the report must (at minimum):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2 [an evaluation of response preparedness and funding to be completed by January 2017];
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

Scope

Given the legislative direction, this study focuses on **public safety preparedness and response to an oil transportation incident involving railroads or pipelines in Minnesota**. The study does not provide analysis or recommendations on prevention activities, environmental mitigation and clean-up, infrastructure development (such as transportation or health system infrastructure), or relative merits of different modes of oil transportation. In the interest of completeness, the report and appendices include interviewees' and survey respondents' advice and opinions regarding these topics.

⁵ Laws of Minnesota 2014, chapter 312, article 10, section 11, subdivision 1

Research Plan and Methods

MAD developed the research plan with DPS and conducted research for this study from August 2014–December 2014.⁶ MAD framed the legislative requirements in the form of questions to focus research and analysis:

- What is Minnesota's preparedness and emergency response framework as it relates to oil transportation incidents?
- What resources does Minnesota have in public and private sectors to respond to an oil incident? Where are these resources located? Resources include major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities.
- Do fire departments and other first responders have the right training and equipment to respond to an oil transportation discharge or spill incident? If not, what other resources would be necessary, and how much would it cost to increase capacity?
- How will citizens and officials know that the state is more prepared to respond to an oil incident after making the investments and changes described in the legislation?
- Considering the funds allocated in the 2014 legislation⁷ and Minnesota's current preparedness, are articulated legislative priorities clear?
- In addition to the changes and training underway because of the 2014 legislation, what long-term efforts are necessary to improve preparedness in Minnesota?
- What laws should be changed (if any) to improve Minnesota's ability to respond to an oil transportation incident?

MAD used several data sources to provide responses to the legislative requirements and corresponding research questions:

- Review and analysis of information on state and federal laws, state and federal agencies, approaches developed by other states and provinces, and research, analysis, and guidance from experts in the field of emergency preparedness and response. MAD conducted a focused literature review using research databases, government reports, public websites, and information from interviewees.
- Comprehensive interviews with subject matter experts, including rail and pipeline company representatives, state agency representatives, and associations of first responders and local governments. (Appendix A)
- A survey of fire department chiefs, sheriffs, police department chiefs, and emergency managers in jurisdictions that are potentially affected by an oil transportation incident. (Appendices B & C)
- Focused interviews with state and local elected officials in areas potentially affected by an oil transportation incident. (Appendix D)

⁶ The timing of this study is relevant. As discussed in later sections of this report, some members of the public, elected officials, and government regulators were focusing attention during this time on rail and pipeline safety and on rail transportation generally.

⁷ Minnesota Statutes 2014 § 299A.55

Methodologies used to conduct the interviews and survey are described in detail in the appendices of this report.

Background

Section Overview

To better understand oil transportation incident preparedness, some context is necessary.

This section of the report provides background information in these areas:

- Emergency management concepts
- Oil is one of many risks in Minnesota
- Oil transportation in Minnesota
- Oil transportation risks are salient in Minnesota
- 2014 legislation in Minnesota regarding rail and pipeline safety

Emergency Management Concepts

Several key emergency management concepts are important background to this study.

Phases of emergency management

Emergency management can be said to consist of a number of different phases: prevention, preparedness, response, recovery, and mitigation.

- **Prevention** includes actions taken to stop an incident from occurring.
- **Preparedness** “is focused on the development of plans and capabilities for effective disaster response.”
- **Response** “is the immediate reaction to a disaster. It may occur as the disaster is anticipated, as well as soon after it begins.”
- **Recovery** focuses on resources and capabilities that help restore communities after a disaster.
- **Mitigation** “consists of those activities designed to prevent or reduce losses from disaster.”⁸

This report focuses on the preparedness and response phases of emergency management.

Preparedness cycle

Within preparedness efforts, emergency management practitioners identify several components, typically thought of as a preparedness cycle, “plans are continuously evaluated and improved through

⁸⁸ List adapted from Association of Minnesota Emergency Managers, “Emergency Management Handbook for Government Officials,” Section 1. August 2012. Accessed December 15, 2014, <http://amemminnesota.org/wp-content/uploads/2013/10/Elected-Officials-Handbook-2012.pdf>. Some emergency planning resources describe *four* phases of emergency management, combining prevention and mitigation phases.

a cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action.”⁹

Response to incidents:¹⁰ Incident management and command systems

As emergency management has developed as a discipline, the National Incident Management System (NIMS) has been developed to help guide responses to all types of incidents in a systematic way. As defined by the U.S. Federal Emergency Management Agency (FEMA),

The National Incident Management System (NIMS) is a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work together seamlessly and manage incidents involving all threats and hazards—regardless of cause, size, location, or complexity—in order to reduce loss of life, property and harm to the environment.¹¹

NIMS is a broad, over-arching guide for all aspects of responding to an emergency that, when utilized at all levels of government and by other responsible parties, can help streamline emergency response actions and reduce, to the extent possible, confusion, and delays.

FEMA, as part of the emergency response planning and execution process outlined with NIMS, also suggests a command structure for purposes of organizing the various public and private entities and their personnel that are expected to be involved in responding to an incident. This structure is known as the Incident Command System (ICS). As described in the NIMS handbook, “The Incident Command System comprises five major functional areas: Command, Operations, Planning, Logistics, and Finance/Administration.” A sixth functional area, Intelligence/Investigations, may be established if required.¹²

The ICS is a top-down system designed to be flexible so it can be adapted to an incident of any scope or size, and involving as few as a single person, up to multiple federal, state, local, and private-sector organizations. One key is that no matter the size of the incident, there is one single person overseeing the entire response—the Incident Commander (IC). Along with IC staff, determinations may be made as to response needs for a given incident. For example, a large-scale rail accident may require local or regional experts, company personnel, someone to talk with the press and be a liaison to other organizations, officials, and the public, as well as potentially the need for hazmat professionals with

⁹ Federal Emergency Management Agency, “Developing and Maintaining Emergency Operations Plans: Comprehensive Preparedness Guide (CPG) 101” Version 2.0., November 2010. Accessed December 9, 2014, http://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg_101_comprehensive_preparedness_guide_developing_and_maintaining_emergency_operations_plans_2010.pdf.

¹⁰ In the emergency planning context, an incident is defined as, “An occurrence, natural or manmade, that requires a response to protect life or property.” FEMA, “National Incident Management System,” December 2008. Accessed December 15, 2014, <https://www.fema.gov/national-incident-management-system>, p. 138.

¹¹ Ibid, p. 1.

¹² FEMA, “National Incident Management System Handbook,” December 2008. Accessed December 15, 2014, http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf, p. 91.

experience in a certain type of substance, such as oil. The ICS structure includes a framework for organizing response to an incident of such magnitude.¹³

Oil: One of Many Risks in Minnesota

Oil is one of several risks that can lead to an incident requiring an emergency response. Tornadoes, flooding, wildfire, nuclear incidents, infectious disease outbreaks, and hazardous material discharges (including oil) are all possible in Minnesota.

State considerations of risks

As part of its homeland security and emergency management functions, Minnesota has adopted the Minnesota State Hazard Mitigation Plan. Among other components, the plan presents an analysis of relative risks of major natural and human-caused hazards that could face Minnesota. Experts ranked these hazards qualitatively as an aid to overall prioritization, but the plan emphasizes that detailed risk assessment is still necessary as part of preparedness efforts.¹⁴

The tables below are adapted from Minnesota’s 2014 Hazard Mitigation Plan.¹⁵ **Hazardous materials (which include oil) are assessed as a medium probability hazard.** The plan notes that the probabilities of these hazards have not changed since the 2011 plan.

The plan examines the future perspectives relating to transportation of oil and notes that responses to hazardous materials incidents may be complicated, and threats may be magnified, by a variety of factors unique to this hazard. These may include “restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment ... [and] the risk of terrorism ...”¹⁶

Table 1. Probability Ranking and Criteria for Hazard Identification¹⁷

Ranking	Criteria
High	The hazard has impacted the state annually, or more frequently The hazard is widespread, generally affecting regions or multiple counties in each event There is a reliable methodology for identifying events and locations
Medium	The hazard impacts the state occasionally, but not annually The hazard is somewhat localized, affecting only relatively small or isolated areas when it occurs The methodology for identifying events is not well-established, or is not applied across the entire state
Low	The hazard occurs only very infrequently, generally less than every five years on a large scale, although localized events may be more frequent The hazard is generally very localized and on a small scale (i.e. sub-county level) A methodology for identifying event occurrences and/or severities is poorly established in the State, or is available only on a local basis.

¹³ Additional information and more detail, including potentially needed personnel and their roles and a command structure template, can be found in Appendix B of the FEMA-NIMS handbook.

¹⁴ DPS, HSEM, “Minnesota State Hazard Mitigation Plan 2014” March 2014. Accessed December 12, 2014, <https://dps.mn.gov/divisions/hsem/hazard-mitigation/Documents/State%20Plan%20Final%202014.pdf>.

¹⁵ Ibid. p. 44–45.

¹⁶ Ibid. p. 194.

¹⁷ Adapted from Minnesota State Hazard Mitigation Plan 2014. Ibid. p. 44.

Table 2. Hazard Identification¹⁸

Hazard	Probability
Drought	High
Extreme Heat	High
Flooding	High
Hail	High
Lightning	High
Tornadoes	High
Wildfire	High
Wind Storms	High
Winter Storms	High
Dam Failure	Medium
Erosion	Medium
Fire (Structure and Vehicle)	Medium
Ground and Surface Water Supply	Medium
Hazardous Materials	Medium
Land Subsidence	Medium
Earthquakes	Low
Infectious Disease Outbreak	Low
Nuclear Incidents	Low
Transportation	Low

Regional assessments

HSEM, counties, cities of the first class, and regions in Minnesota use an established process to examine threats, hazards, and risks in their areas. To examine all of the potential risks, regions considered the probability of hazard or threat, the potential magnitude and severity, warning time, and duration of the likely effects of the hazard or threat.¹⁹ MAD examined the most recent assessments for each region. Regions differ in their assessments of threats, hazards, and risks, but some commonalities in what are identified as high risks. **All regions identified hazardous materials discharges as a high risk**, almost all identified winter storms and tornados as a high risks, half identified other storm events as high risk, and half identified large fire incidents as high risks. **Almost all regions identified a scenario involving a train derailment as part of their assessment process**, usually with a hazardous material (not oil)

¹⁸ Adapted from Minnesota State Hazard Mitigation Plan 2014. Ibid. p. 45.

¹⁹ The methodology used in this assessment is slightly different than the methodology used in the state's Hazard Mitigation Plan.

involved in the scenario. Though regions examined the potential for pipeline incidents and considered pipelines as infrastructure in their areas, **none identified pipeline incidents as high risks.**²⁰

Reports to the State Duty Officer

Another way to put oil transportation incidents into a larger risk context is to consider the calls to the Minnesota Duty Officer, the state's one-call program for emergency assistance and spill notification. **In 2013, the duty officer program received 806 calls for assistance relating to hazardous materials or oil, representing about 10 percent of the 8,515 calls.** Of these calls, about half were related to petroleum tanks, about one-fourth were related to pipeline breaks or leaks; the remainder of calls were requests for bomb squad or emergency response team assistance, reports of releases required under state and federal law, or calls related to weapons of mass destruction threats.²¹

Large categories of other types of calls included requests for information, reports of other types of spills, requests for supplemental assistance, air quality reports, and requests for fire marshal investigators.²²

Oil Transportation in Minnesota

Minnesota does not produce its own oil, but there are two refineries in the state—in Rosemount and St. Paul Park.²³ Nearly all the crude oil that is processed in or passes through Minnesota originates in North Dakota or Alberta, Canada. North Dakota's oil is extracted from the Bakken Shale formation found in Western North Dakota and Eastern Montana. Recent advances in technology, increased demand for oil, and other factors have led North Dakota to become the second largest producer of crude oil in the U.S.²⁴ The same factors have led to increased demand for crude oil derived from oil (or tar) sands, such as that found in Alberta. Estimates rank Canada as having the third largest known oil sands deposits in the world.²⁵ The Alberta oil sands are, by far, the largest source of Canadian crude oil. Nearly all of Canada's oil exports head to the U.S, and there has been a rapid increase of the amount of

²⁰ 2013 Threat Hazard Risk Identification and Assessments; HSEM Regions 1, 2, 3, 4, 5, 6. Information provided by HSEM.

²¹ DPS, HSEM, "2013 Annual Report to the Legislature: The readiness of state government to respond to discharges of oil or hazardous substances," 2013. Accessed December 9, 2014, <http://archive.leg.state.mn.us/docs/2014/mandated/140177.pdf>,

²² Ibid.

²³ According to their websites, Koch's Flint Hills Pine Bend and Northern Tier Energy's Rosemount refineries have a daily crude oil capacity of about 339,000 and 89,500 barrels, respectively. In comparison, North Dakota's daily crude oil production alone surpasses 1,000,000 barrels per day. Flint Hills Resources, "Products | Pine Bend Refinery." Accessed December 12, 2014, <http://pinebendrefinery.com/about-us/products/> and Northern Tier Energy, "Refining Northern Tier Energy." Accessed December 12, 2014, <http://www.ntenergy.com/new-products-services/products-services-refining/>. Also Minnesota Department of Transportation, "Crude-by-Rail Transportation in Minnesota."

²⁴ U.S. Energy Information Administration. "North Dakota Field Production of Crude Oil (Thousand Barrels)." Accessed December 1, 2014, <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRFPND1&f=M>.

²⁵ Congressional Research Service. "Oil Sands and the Keystone XL Pipeline: Background and Selected Environmental Issues." April 14, 2014.

oil exported to the U.S. From 2012 to 2013, crude oil transported by rail alone from Canada to the U.S. increased by 177 percent.²⁶

Minnesota's proximity to these two sources and its location between major refinery and other crude oil destinations in the Southern and Eastern U.S. means that oil is readily available and plentiful; the state is a major highway, of sorts, for an enormous amount of oil being transported elsewhere.²⁷

Recent exponential increases in the amount of oil extracted from the Bakken area means that oil-by-rail transportation in Minnesota and elsewhere will likely increase dramatically in coming years. According to a Minnesota Department of Commerce memo, about 700,000 barrels per day of Bakken crude is transported via rail—equating to about nine trains worth of oil per day. Of those trains, seven pass through Minnesota, with all but one routed through the Twin Cities region. Projections for future oil transportation needs indicate that about 70 percent of that Bakken crude will be transported by rail, in addition to what is already being transported.²⁸

Railways and pipelines transporting oil and other liquids crisscross the state (see Figure 1 and Figure 2, below), with most clustering together in a handful of major transportation or refinery hubs—almost always in close proximity to a major urban area. In many cases, these interstate and international oil conduits at some time pass nearby, and often directly over or under, a number of bodies of water.

The major rail companies operating in the state are BNSF and Canadian Pacific (CP) and, to a lesser extent, Union Pacific (UP) and Canadian National (CN). Companies with major pipeline operations operating here are Enbridge, Koch, and Magellan; those with smaller operations include BP, Kinder Morgan-Cochin, Nustar Energy, and Northern Tier Energy.

Figure 1 and Figure 2 show the geographic spread of rail and pipelines in Minnesota by illustrating the fire departments and their mutual aid counterparts. Note that the pipeline map includes crude and other liquids, while the railroad map includes only crude-by-rail lines.

Nearly all of the state's crude oil entry points are clustered in three parts of western Minnesota: the far northwest corner (Kittson, Marshall, and Polk counties), the mid-west portion (the Grand Forks and Fargo-Moorhead areas), and the far southwest corner (primarily Lincoln, Pipestone, and Rock counties). A significant amount of oil passes near or through the Twin Cities area on its way east and south.²⁹ Other important oil-transport thoroughfares include Clearbrook, the Duluth-Superior region,

²⁶ U.S. Energy Information Administration, "Canada." Accessed December 11, 2014, <http://www.eia.gov/countries/cab.cfm?fips=CA>.

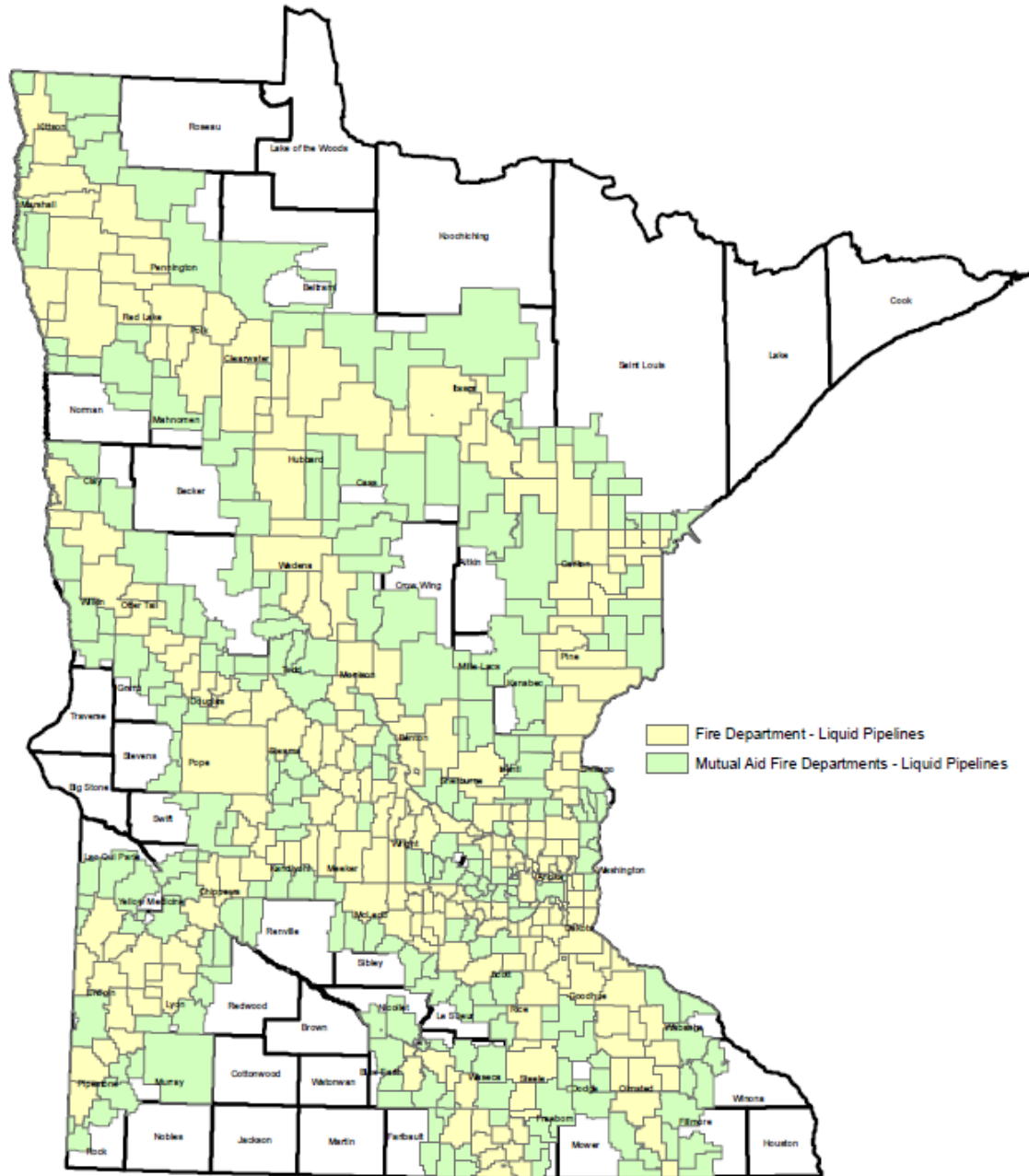
²⁷ Eleff, Bob, "Minnesota's Petroleum Infrastructure: Pipelines, Refineries, Terminals." Research Department, Minnesota House of Representatives, June 2013. Accessed December 15, 2014, <http://www.house.leg.state.mn.us/hrd/pubs/petinfra.pdf>. Also, Minnesota Department of Transportation, "Crude-by-Rail Transportation and Safety in Minnesota" 2014. Accessed December 15, 2014, http://www.dot.state.mn.us/ofrw/railroad/crude_faqs.html.

²⁸ October 6, 2014 memorandum from Grant and Christianson to Dornfeld.

²⁹ Minnesota Department of Transportation, "Crude-by-Rail Transportation in Minnesota." Accessed December 12, 2014, http://www.dot.state.mn.us/ofrw/railroad/crude_faqs.html#seven. Also, October 6, 2014 memorandum from Bill Grant, Minnesota Department of Commerce and David Christianson, MnDOT to Joanna Dornfeld, Governor's Office "Minnesota Crude Oil Transportation."

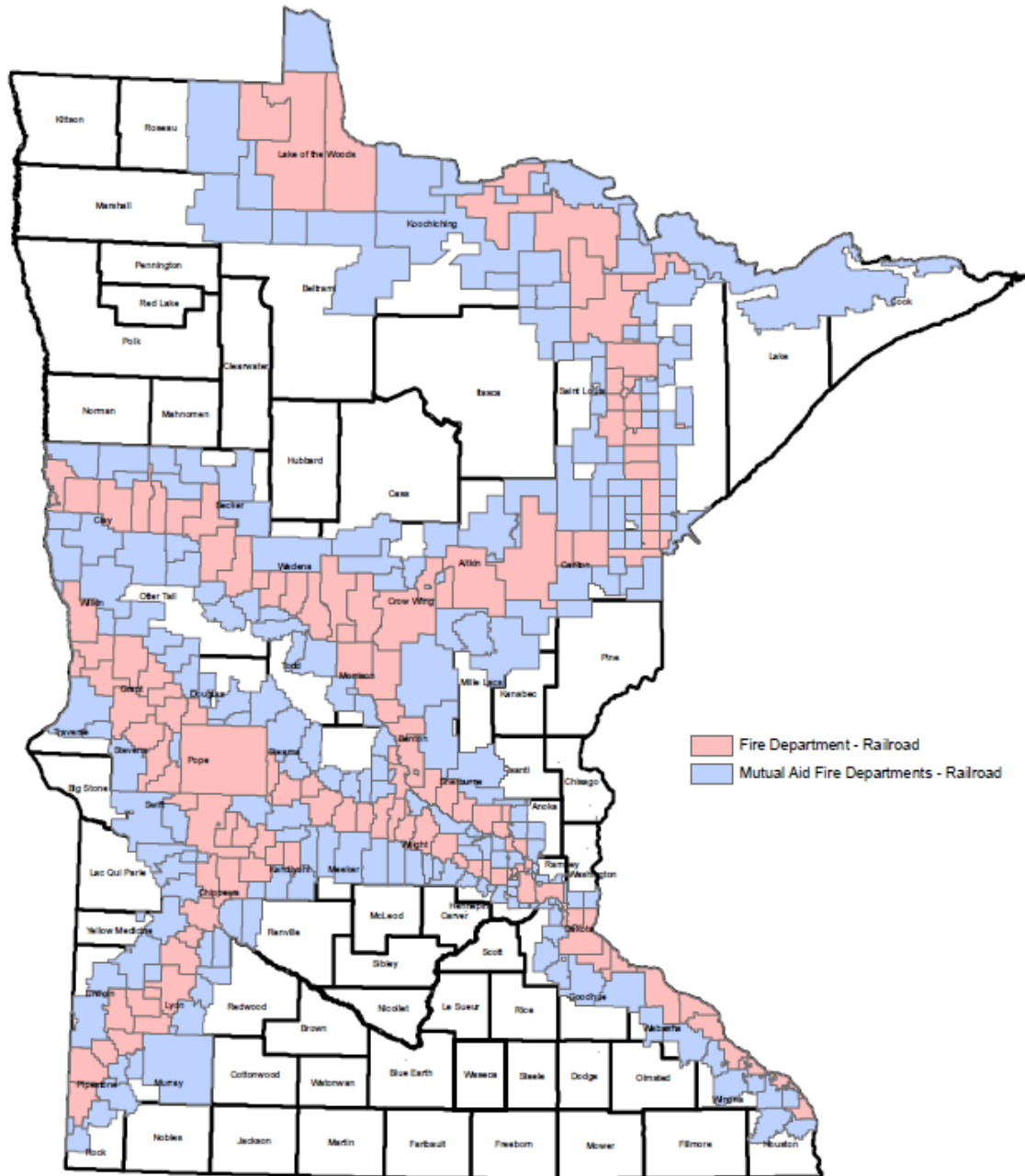
Detroit Lakes, and St. Cloud, as well as Rochester and Winona. South of the Twin Cities metro area, the Mississippi River Valley has major interstate oil transportation infrastructure.

Figure 1. Fire Department Jurisdictions that Intersect Crude and Other Liquid Product Pipelines and Adjacent Mutual Aid Fire Departments³⁰



³⁰ Map developed by DPS, 2014.

Figure 2. Fire Department Jurisdictions that Intersect Oil Transporting Railroads and Adjacent Mutual Aid Fire Departments³¹



Oil Transportation Risks: A Salient Issue in Minnesota

As described above, Minnesota is now a major conduit for crude oil and other petroleum products to other parts of the country—particularly to refineries in the south and eastern United States. While some

³¹ Map developed by DPS, 2014.

crude oil is processed in the state, most of it is transported elsewhere for processing—either by pipeline, or, increasingly, by rail.

Risks associated with crude oil from the Bakken Shale formation

The volatility of crude oil from the Bakken Shale formation and associated transportation safety concerns have been the subject of intense discussion and debate. Some argue that this type of crude is no more volatile, or flammable, than other hazardous materials transported throughout the state. These critics often cite human error or poor safety regulations for recent accidents. Others argue that in addition to this crude being more volatile than other types of unrefined crude oil, the higher level of volatility was either unknown by transporters or not widely understood by the public. Some also claim that the rail cars and some of the infrastructure they travel on are not adequate to guarantee safe transport of the product through the state and elsewhere.³²

A recent U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA) Safety Alert indicated that crude oil from the Bakken Shale formation may be more flammable than other types of unrefined crude.³³

The Congressional Research Service (CRS) puts Bakken crude in context:

All crude oils are flammable, to a varying degree. Further, crude oils exhibit other potentially hazardous characteristics as well. The growing perception is that light volatile crude oil, like Bakken crude, is a root cause for catastrophic incidents and thus may be too hazardous to ship by rail. However, equally hazardous and flammable liquids from other sources are routinely transported by rail, tanker truck, barge, and pipeline, though not without accident.³⁴

Although oil industry experts dispute that crude oil from the Bakken Shale formation carries higher risk than other types, **North Dakota regulators recently agreed on new rules requiring that all crude leaving North Dakota must first be treated to remove certain liquids and gases before leaving the oil fields on rail cars.**³⁵

Concerns about the volatility of this type of crude are beginning to be addressed. In addition to the new North Dakota regulations, federal regulators recently proposed additional enhancements that would impact all oil-by-rail transportation in the country. These include requiring oil tank car safety improvements, imposition of new volume-based standards, and provisions that would improve

³² For examples of arguments, see Stern, Marcus, and Sebastian Jones, “BOOM: North America’s Explosive Oil—by-Rail Problem,” The Weather Channel and Inside Climate News, December 11, 2014. Accessed December 15, 2014, <http://stories.weather.com/boom>.

³³ PHMSA, “Recommendations for Tank Cars Used for the Transportation of Petroleum Crude Oil by Rail, Safety Advisory 2014-01.” Accessed December 15, 2014, http://phmsa.dot.gov/pv_obj_cache/pv_obj_id_9084EF057B3D4E74A2DEB5CC86006951BE1D0200/filename/Final_FRA_PHMSA_Safety_Advisory_tank_cars_May_2014.pdf.

³⁴ Congressional Research Service. “Crude Oil Properties Relevant to Rail Transport Safety: In Brief.” February 14, 2014.

³⁵ MacPherson, James. “North Dakota Regulators Impose Oil Shipment Rules,” Associated Press via KSTP.com. Accessed December 11, 2014, <http://kstp.com/news/stories/S3644900.shtml>.

training, equipment, and documentation requirements regarding crude oil transport. With recent increase in production projected to continue for decades to come, however, the volume and volatility of Bakken and other crude transported through the state will likely continue to be a public policy concern.

Rail and pipeline accidents in the United States and Canada

Fires and explosions make the evening news, but less dramatic oil transportation accidents³⁶— including spills and other releases— are more common, though both types are relatively infrequent overall. However, particularly in the case of rail, domestic occurrences of such incidents have increased in recent years.

Rail and pipeline accidents are not limited to oil. Many materials, both hazardous and non-hazardous, are transported throughout the country. Examples of hazardous materials besides oil include ethanol, ammonium gas, gasoline, methane, other chemicals, and even nuclear waste. Further, one interviewee for this study pointed out that some of the things we may think of as being non-hazardous can still cause damage and create difficult cleanup situations if spilled, giving the example of a soybean oil spill that made its way into an adjacent waterway. Vehicles, livestock, televisions, grain, and many other commodities are also transported in vast quantities throughout the country on a daily basis.

Pipeline Accidents

The National Transportation Safety Board collects information about pipeline accidents. As an example, one recent pipeline accident listed on the NTSB's website occurred in New York City on March 12, 2014, reportedly resulted in eight deaths, injuries to 48 people, the destruction of two five-story buildings, and caused additional damage and disruption to neighboring areas.³⁷ Pipeline accidents frequently involve environmental damage that do not cause obvious immediate death, injury, or destruction, but can be severe and even catastrophic. Recent examples of such occurrences include a pipeline rupture in Marshall, Michigan that leaked oil into the Talmadge Creek and Kalamazoo River. NTSB states that the cleanup from this release is on-going, requiring \$760 million in cleanup costs to-date, and that about 320 people in the area have reported crude oil exposure-related symptoms.³⁸

According to information available on the NTSB website,³⁹ there have been 17 reported pipeline-related accidents in the U.S. since the turn of the century; since 2010, there have been just four.⁴⁰ Rail accidents tend to garner more attention than pipeline accidents simply because they are generally much more visually apparent. Pipeline accidents can involve leaks and spills that go undetected for long periods of time, and they often occur in remote areas.

³⁶ In this section, the term "accident" and "incident" are used interchangeably.

³⁷ NTSB, "Preliminary Report Pipeline DCA14MP002." Accessed December 12, 2014, https://www.nts.gov/doclib/reports/2014/Manhattan_NY_Pipeline_Preliminary_Report.pdf.

³⁸ NTSB, "Enbridge Incorporated Hazardous Liquid Pipeline Rupture and Release." Accessed December 11, 2014, <https://www.nts.gov/investigations/summary/PAR1201.html>.

³⁹ As of December 12, 2014.

⁴⁰ NTSB, "Pipeline Accident Reports." Accessed December 11, 2014, https://www.nts.gov/investigations/reports_pipeline.html.

Rail Accidents

The NTSB also collects data on rail accidents, and that information shows that there are many more rail than pipeline accidents, although an NTSB-reported rail accident does not mean that a spill or hazardous release event has occurred. As an example, one recent rail accident was December 1, 2014 in Keithville, LA.⁴¹ According to the report, “there were three crewmembers aboard each train. All of the [Union Pacific] crewmembers and one BNSF crewmember were injured. There was no significant fire or release of hazardous materials. Damages were estimated at \$7.8 million.” According to the report, the accident resulted from operator error. NTSB reports that since 2010, there have been 38 rail accidents, 21 of which occurred in 2014 alone.⁴²

Rail accidents are more prevalent and frequent than pipeline accidents. Trains, railways, and rail yards are subject to many more risks that are outside the control of their operators and owners than is the case for pipelines. Pipelines are accidentally ruptured or damaged by forces of nature and man-made or-controlled events, such as an errant farmer plowing a new field. Weather can have unpredictable impacts on pipelines as well. In the case of trains, there are many more opportunities for an external human or force of nature to create a potentially catastrophic train-related incident. Again, increased amounts of oil being transported throughout the country only increases the likelihood of an incident, whether due to an outside force or through operator error or equipment failure or malfunction. In fact, according to a January 2013 McClatchy DC analysis of federal data, “more oil [was] spilled in 2013 than in [the] previous 4 decades.”⁴³

A December 4, 2014 Congressional Research Service (CRS) report, “U.S. Rail Transportation of Crude Oil: Background and Issues for Congress,” lists eight rail derailments involving oil transportation in 2013 and 2014, only five of which occurred in the U.S. The U.S. accidents were in Aliceville, Alabama, Casselton, North Dakota, Philadelphia and Vandergrift, Pennsylvania, and Lynchburg, Virginia. No fatalities or injuries occurred in any of the U.S. accidents.

Rail and pipeline accidents in and near Minnesota

Recent high-profile rail accidents in nearby Casselton, North Dakota (December 20, 2013) and in the more distant Lac-Mégantic, Quebec (July 6, 2013)⁴⁴ raised concerns across the nation about oil

⁴¹ NTSB, “Collision of BNSF Railway Company and Union Pacific Railroad Trains Near Keithville, Louisiana,” Accessed December 11, 2014, <https://www.nts.gov/investigations/summary/RAB1414.html>.

⁴² NTSB, “Railroad Accident Reports,” Accessed December 11, 2014, https://www.nts.gov/investigations/reports_rail.html.

⁴³ Tate, Curtis. “More oil spilled from trains in 2013 than in previous 4 decades, federal data show,” McClatchy DC, January 20, 2014. Accessed December 12, 2014, <http://www.mcclatchydc.com/2014/01/20/215143/more-oil-spilled-from-trains-in.html>.

⁴⁴ The Lac-Mégantic accident caused 47 deaths and millions of dollars-worth of property damage. The more recent Casselton accident occurred just west of the Minnesota-North Dakota border. A westbound train carrying grain derailed and was soon hit by an eastbound crude oil unit train, which presumably was destined to travel through Minnesota. While there were no fatalities and no reported injuries, the crash caused a massive explosion and fireball, and the voluntary evacuation of about 1,400 people from Casselton. On Lac-Mégantic, see NTSB, “Safety Recommendation, R-14-001-003,” Accessed August 21, 2014 <http://alpha.nts.gov/int/safety/safety-recs/RecLetters/R-14-001-003.pdf> On Casselton, see NTSB, “Preliminary Report, Railroad, DCA14MR004.” Accessed December 12, 2014, https://www.nts.gov/doclib/reports/2014/Casselton_ND_Preliminary.pdf.

transportation safety, and raised the alarm for many in Minnesota who have witnessed the increase in rail traffic through the state in recent years. Additionally, pipeline oil transportation has been a recent high-profile issue in the U.S. and Minnesota as companies seek permits to increase their transportation capacity, often looking for approval to build new pipelines or expand existing ones.

While oil by rail transportation has increased substantially in recent years, MnDOT notes that there have been no crude-by-rail-related fatalities in the entire U.S. since 1990.⁴⁵ MnDOT estimates that seven oil-carrying trains pass through Minnesota each day, with each train carrying 3.3 million gallons of oil.

Recent oil-by-rail incidents in Minnesota include a Canadian Pacific derailment in March 2013 near Parkers Prairie.⁴⁶ There were no injuries, and it was estimated that less than 15,000 gallons of oil had spilled. In early 2014, a train leaked about 12,000 gallons of crude oil over about 70 miles between Winona and Red Wing, Minnesota; described as a “dribble,” the spill was not anticipated to have a significant impact.⁴⁷

The most recent pipeline spill in Minnesota reported on the NTSB website occurred in July 2002. About 252,000 gallons of oil were released into a marsh near Cohasset. There were no resulting deaths or injuries. The cost of the accident was reported to be approximately \$5.6 million, and was determined to be the result of a fatigue crack in a pipe weld that likely existed prior to installation. Several other pipeline incidents related to oil are reported in Minnesota’s State Hazard Mitigation Plan, including a December 2009 spill of 3,500 barrels of crude oil containing 58,000 pounds of benzene (no one was injured and the spill was primarily contained in an excavation site), and a November 2007 explosion of a pipeline in Clearbrook (two welders were killed).⁴⁸

Perhaps the most famous pipeline incident in Minnesota occurred near Bemidji in 1979 when a pipeline ruptured, spilling about 450,000 gallons of oil. About 100,000 gallons remain underground, and have provided opportunities for oil spill research.⁴⁹

In all, Minnesota has not experienced the catastrophic rail or pipeline incidents experienced elsewhere.

Perspectives of elected officials regarding oil transportation incidents

Selected state and local elected officials were contacted for information relevant to this study. For a more detailed discussion of these interviews and an analysis of interview results, including more information about MAD’s research methodology, review Appendix D.

⁴⁵ Minnesota Department of Transportation, “Crude-by-rail transportation and safety in Minnesota.” Accessed December 12, 2014, http://www.dot.state.mn.us/ofrw/railroad/crude_faqs.html#seven.

⁴⁶ McAllister, Edward. “Canadian Pacific oil spill cleanup to last two days,” *Reuters*, March 28, 2013. Accessed December 12, 2014, <http://www.reuters.com/article/2013/03/28/us-usa-derailment-oilspill-idUSBRE92R02V20130328>.

⁴⁷ Baier, Elizabeth. “Cleanup of Winona oil spill begins Thursday,” *MPRNews.org*, February 5, 2014. Accessed December 13, 2014, <http://www.mprnews.org/story/2014/02/05/winona-oil-spill-cleanup>.

⁴⁸ DPS, “Hazard Mitigation Plan 2014”

⁴⁹ Schaffer, David. “In Bemidji, a research site reveals secrets of an oil spill” *Star Tribune*, June 15, 2014. Accessed December 12, 2014, <http://www.startribune.com/science/263118021.html>

When asked to rate the risk of an oil transportation incident for the area they represent, relative to other potential risks, responses were mixed. On a scale of one to five, with one being a not significant risk and five being very significant, only seven of 31 respondents were neutral (a rating of three) on the relative risk of an oil transportation incident. Others were evenly split—12 rated the risk towards the “very significant” end of the scale (assigning a value of a four or a five), and 12 rated the risk towards the “not significant” end (assigning a value of one or two).

At the same time, most officials felt that their constituents *do not* put preparedness for an oil transportation incident among their top concerns. Using a one-to-five scale, with one being “not important” and five being “most important,” 19 of 31 respondents rated oil transportation as either a one or two in importance, relative to other constituent concerns. In fact, only two respondents assigned a five rating (most important) to preparedness for a potential oil transportation incident compared to other concerns.

Without additional research work and follow-up interviews, it is difficult to draw definitive conclusions from these officials’ responses about their constituents’ concerns, but these officials’ explanatory comments are enlightening. One official said he heard about trains all the time from constituents, and while an oil incident may be in the back of their minds, they were vocally concerned about the congestion long trains caused. Another said a local nuclear facility is a much bigger concern in their area. Others cited competing issues such as jobs, schools, and transportation in general. An official who rated constituent concern as a two said that he hasn’t heard this concern expressed often, even after the Casselton incident. A few other officials noted the relative lack of awareness about oil transportation in their communities. Others said that concern is rising, especially in areas that are close to rail or pipelines; some noted that peoples’ concern tends to increase when they learn more about the volume of oil and the risks.

Railway community meetings and governor’s survey

From August to October 2014, Governor Mark Dayton convened roundtable meetings across Minnesota to hear community concerns regarding rail safety,⁵⁰ and his office conducted a survey of communities along freight rail lines to gather information about the impact of increased rail traffic.⁵¹

Six communities hosted roundtable discussions (Alexandria, Duluth, Little Canada, Moorhead, Red Wing, and Winona), and about 70 communities responded to the survey. Community members, public officials, and emergency first responders expressed a number of concerns related to rail transportation generally, such as resident complaints about noise, difficulties caused by traffic congestion, and business concerns about shipping. Some individuals urged additional actions to prevent or mitigate damage from rail accidents, including improving tracks and bridges, improving tank cars, and reducing the volatility of oil at its source. Some comments regarding public safety preparedness were

⁵⁰ Office of Governor Mark Dayton, “Governor Dayton to Hold Railway Safety Meetings in Communities Across Minnesota” [Press Release], August 11, 2014. Accessed December 2, 2014, <http://mn.gov/governor/newsroom/pressreleasedetail.jsp?id=102-138624>.

⁵¹ Office of Governor Mark Dayton, “Governor Dayton to Local Leaders: How is Increased Railway Traffic Impacting Your Communities?” [Press Release], September 24, 2014. Accessed December 2, 2014, <http://mn.gov/governor/newsroom/pressreleasedetail.jsp?id=102-141955>.

similar to those expressed by Minnesota experts and local first responders described in later sections of this report.

Community recommendations that are directly related to public safety preparedness and response include:

- Additional training for fire departments, law enforcement, and public officials regarding rail transportation safety and response. Some individuals noted that rail companies are already providing this type of training for fire departments.
- Increased communication from rail companies regarding transported materials and regarding rail companies' preparedness efforts.
- Additional resources for local governments to offset costs of sending first responders to training and to purchase additional equipment that may be needed.
- Increased public awareness on rail safety (regarding rail safety in general and regarding oil transportation in particular).
- Additional regional chemical assessment teams or emergency response teams.
- Additional preparedness efforts involving health care organizations.⁵²

2014 Legislation

In this context of oil transportation risks in Minnesota, the legislature passed (and Governor Mark Dayton signed) a bill expanding state laws regarding railroad and pipeline safety. The law increases state agency oversight of railroad companies, it requires additional inspection of railroads, and it sets priorities for increased local emergency response preparedness. Funds are established for improving grade crossings, funding inspection and enforcement, and increasing preparedness and response capacity. The legislation also requires studies and evaluations, including a study of railroad grade crossings and this study on public safety preparedness for an oil transportation incident.

The primary agencies involved in implementing the legislation are the Minnesota Department of Transportation (MnDOT), the Minnesota Department of Public Safety (DPS), and the Minnesota Pollution Control Agency (MPCA).

Additional information about the statutory changes and the work of state agencies are in other parts of this report.

⁵² Information compiled using notes from Governor Mark Dayton's office and news accounts, including: Davis, Don, "North Dakota oil trains worry Minnesota officials; 'You have gaps layered upon gaps'" *Pioneer Press*, August 12, 2014. Accessed December 2, 2014, http://www.twincities.com/localnews/ci_26320865/north-dakota-oil-trains-worry-minnesota-officials-you. Hansen, Nathan, "A long ways to go': Minnesota moving forward on rail safety, but much more still to be done" *Winona Daily News*, September 10, 2014. Accessed December 2, 2014, http://www.winonadailynews.com/news/local/govt-and-politics/a-long-ways-to-go-minnesota-moving-forward-on-rail/article_bcdf6f72-10c7-5309-bea6-c028176f45dc.html. Slater, Bradley "Mark Dayton meets business leaders on rail-shipping concerns" *Pioneer Press*, October 15, 2014. Accessed December 2, 2014, http://www.twincities.com/localnews/ci_26731679/mark-dayton-meets-business-leaders-rail-shipping-concerns.

Conclusions

Oil and other hazardous materials incidents are one of many risks in Minnesota—other threats, risks, and hazards are of serious concern to state and regional emergency management planners. Oil is transported across Minnesota via rail and pipeline routes that cross large parts of the state; almost any area of the state could be directly or indirectly affected by an oil transportation incident. Oil transportation has become a salient issue in Minnesota and elsewhere for several reasons: increased production and distribution of oil from North Dakota and Alberta; catastrophic incidents involving rail and pipeline transport of oil, particularly recent derailments and fires involving crude oil from the Bakken formation; and findings from federal regulators that this type of crude is highly volatile. Community stakeholders, including emergency management officials, elected officials, and the public, have expressed their concerns about rail transportation at community forums in recent months; public safety regarding oil transportation incidents is one of their concerns. Legislation passed in 2014 responds to some of these concerns.

Minnesota's Preparedness and Emergency Response Framework

Section Overview

Legislative requirements addressed in this section (dark text):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2;
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

A state's overall emergency response framework is made up of interconnected public sector responsibilities and roles—state, local, and federal government actors and laws contribute to an area's ability to respond in an emergency. In the context of oil transportation incident preparedness, as with other hazardous materials incident preparedness, there is an additional level of private sector responsibility.

This section provides information on preparedness and response in the following areas:

- State legal framework
- State and local responsibilities
- Private sector (rail and pipeline) roles and responsibilities
- Federal roles and responsibilities

State Legal Framework for Emergency Preparedness and Response

The State of Minnesota has a comprehensive legal framework for emergency preparedness and response; though it is not entirely specific to oil transportation incidents, the legal framework defines the roles and responsibilities of public and private entities that may respond to an incident.

This section provides a brief overview of the executive order, statutes, and rules related to emergency preparedness and public safety response to incidents, and it identifies other related state laws.

Minnesota's emergency management framework

State agency responsibilities (Executive Order 13-13)

In November 2013, Governor Mark Dayton signed the current executive order assigning emergency responsibilities to state agencies.⁵³ Executive Order 13-13⁵⁴ requires that identified departments and agencies designate points of contact, engage in planning and preparedness activities, respond in times of emergency, and provide recovery and hazard mitigation support as directed.

Several aspects of the executive order are particularly relevant to oil transportation safety preparedness:

- DPS/HSEM is the responsible agency for coordinating and maintaining the state's all-hazard emergency operations plan.
- State agencies will carry out their responsibilities as outlined in the Minnesota Emergency Operations Plan and the Minnesota State Hazard Mitigation Plan, or as directed by HSEM.
- When state agencies respond to a disaster or emergency, they will use the National Incident Management System Incident Command System.⁵⁵

Minnesota Emergency Management Act (Minnesota Statutes § 12)

Minnesota's Emergency Management Act is the primary statute relating to emergency preparedness and response. Among other provisions, the Act establishes the division of emergency management (now HSEM), defines the powers and duties of the governor and local organizations, and defines emergency powers and duties.

The act sets out the policy of the state:

It is further declared to be the purpose of this chapter and the policy of the state that all emergency management functions of this state be **coordinated to the maximum extent** with the comparable functions of the **federal government**, including its various departments and agencies, of **other states and localities**, and of **private agencies of every type**, to the end that the most effective preparations and use may be made of the nation's labor supply, resources, and facilities for dealing with any disaster that may occur.⁵⁶

Of particular relevance to oil transportation public safety preparedness, the act:

Establishes duties of HSEM: Among other duties, HSEM is charged with coordinating state agency preparedness and emergency response, developing the state's emergency operation and hazard mitigation plans, coordinating the development and maintenance of local emergency operation plans

⁵³ Though the specific content and detailed responsibilities are different, Executive Order 11-03 follows the general framework used by previous governors. The current order—as with the orders of previous governors—follows the general format initiated by Governor Wendell Anderson in 1975 (Executive Order 75-102, available at <http://www.leg.mn/archive/execorders/75-102.pdf>).

⁵⁴ Governor Dayton's Executive Order 13-13 can be found at <http://www.leg.mn/archive/execorders/13-13.pdf>.

⁵⁵ This system is described on page 24.

⁵⁶ Minnesota Statutes 2014 §12.02, subd. 2, emphasis added.

and emergency management programs, coordinating emergency preparedness drills involving multiple state agencies, maintaining and administering an emergency management training curriculum, and establishing a single state answering point system for reporting emergency incidents (including those involving hazardous substances or oil).^{57, 58}

Defines roles and responsibilities for local governments: Political subdivisions are required to establish local emergency management programs; directors are appointed by the mayor (for cities) or governing boards or bodies (for counties and other political subdivisions). County organizations are responsible for coordinating the activities of local emergency management organizations throughout the county and may assist in training these emergency management organizations.⁵⁹ Additionally, political subdivisions are authorized to levy property taxes to pay for emergency management expenses.⁶⁰

Encourages coordination, mutual aid, and emergency assistance: Several sections of the statute describe ways that local and state government entities can coordinate their efforts for emergency management and response.

§ 12.25, subd. 5 allows **two or more political subdivisions** to determine the geographic boundaries of their emergency management responsibilities or **to develop a common emergency management organization**. The act later refers to these as interjurisdictional agencies.

§ 12.27 allows local organizations for emergency management to develop mutual aid agreements in collaboration with other public and private agencies in Minnesota or with organizations in other states (with approval of the governor). These agreements would allow for reciprocal emergency management aid and assistance “in an emergency or disaster too great to be dealt with unassisted.”

§ 12.331 allows a political subdivision to request assistance of another political subdivision “[w]hen the public interest requires it because of an emergency,” and it provides a method for reimbursement of expenses for use of personnel, equipment, and supplies (damage to equipment is not reimbursable).⁶¹

§ 12.351 allows the director of HSEM to activate a special emergency response team and deploy the team to a political subdivision if the director determines that this response to an emergency or disaster is in the public interest.

⁵⁷ Minnesota Statutes 2014 § 115E.09 contains a more expansive description of a required single answering point system.

⁵⁸ Minnesota Statutes 2014 § 12.09

⁵⁹ Minnesota Statutes 2014 § 12.25

⁶⁰ Minnesota Statutes 2014 § 12.26

⁶¹ § 12.33 contains similar provisions but deals with situations where the governor *directs* a political subdivision to send police, firefighting, health, or other forces to another political subdivision.

Preparedness: State legal framework

Oil and Hazardous Substance Discharge Preparedness (Minnesota Statutes § 115E)

Minnesota's Oil and Hazardous Substance Discharge Preparedness statute, often referred to as the "Spill Bill," requires owners and operators of facilities and vessels to prevent and respond to discharges of hazardous materials or oil. The statute also provides authority to agencies responsible for enforcing aspects of the law, including DPS, MPCA, and the Department of Agriculture.

Duties to prevent and prepare for spills

As relevant to this report, the statute covers structures, equipment, motor vehicles, rolling stock, and pipelines that are involved in transporting oil. Any person who owns or operates one of these facilities has a duty to prevent the discharge of hazardous substances and oil.⁶² These persons are also required to be **"prepared at all times to rapidly and thoroughly recover discharged hazardous substances or oil that were under that person's control and to take all other actions necessary to minimize or abate pollution of land, waters, and air of the state and to protect the public's safety and health."**⁶³

Preparedness requirements for railroad and pipeline owners and operators

The statute sets out specific preparedness requirements for persons who "own or operate railroad car rolling stock transporting an aggregate total of more than 100,000 gallons of oil or hazardous substance as cargo in Minnesota in any calendar month" or who "own or operate hazardous liquid pipeline facilities through which more than 100,000 gallons of oil or hazardous substance is transported in any calendar month."⁶⁴

These persons, among others, are required to maintain preparedness to **respond effectively to worst case discharges**,⁶⁵ and they are required to demonstrate preparedness to the Pollution Control Agency (or Department of Agriculture, in the case of agricultural chemicals). Preparedness can include directly employing personnel and equipment or maintaining agreements with for-hire clean-up contractors, with a community awareness and emergency response organization (CAER), or with public sector response organizations (local, state, or federal). Preparedness plans must meet requirements regarding prevention, communication, and incident command, descriptions of response resources, and description of actions in the event of a worst case discharge. Plans must be provided to the commissioners identified in statute or official of a political subdivision "with appropriate jurisdiction" on request.⁶⁶

⁶² Minnesota Statutes 2014 § 115E.02

⁶³ Minnesota Statutes 2014 § 115E.03, subd. 1, emphasis added.

⁶⁴ Minnesota Statutes 2014 § 115E.03, subd. 2–4, and § 115E.04.

⁶⁵ "Worst case discharges" are defined in Minnesota Statutes 2014 § 115E.01, subd. 13 as including incidents such as "in the case of a pipeline facility, sudden loss of the contents of the pipeline which would be expected from complete failure of the pipeline onto land or into water in weather conditions that impede cleanup," and "in the case of railroad rolling stock facilities, sudden loss of the contents of the maximum expected number of the railcars containing oil or hazardous substance of a train onto land or into water in weather conditions that impede cleanup."

⁶⁶ Minnesota Statutes 2014 § 115E.04, subd. 4(a).

Powers of commissioners to ensure preparedness

For those entities required to have worst case discharge plans, one or more of the commissioners identified in statute can call for announced or unannounced drills, contact persons or organizations identified in the plan to confirm their roles and capabilities, or use other means to verify that a facility is prepared for a worst case discharge.⁶⁷

Additionally, for all covered facilities, if one or more of the commissioners finds that the prevention and response plans do not meet requirements, the commissioner can order the facility to make amendments to their plan or take additional measures to ensure timely prevention and preparedness.⁶⁸

Coordination and assistance

Several sections of the statute describe ways that local and state government entities can and should coordinate their efforts.

- The statute provides liability protection to persons who offer assistance in response to a discharge, including members of cooperatives or CAER groups, employees or officials of political subdivisions, members of designated response teams, and others.⁶⁹
- As noted above, the statute allows persons to demonstrate preparedness through a number of different collaborative means.
- The statute appoints the commissioner of DPS as the coordinator of state agency preparedness for response to a discharge and directs DPS to assess preparedness of state agencies and chair regular meetings to prepare for a coordinated response, among other duties. State agency responsibilities and jurisdictions are defined by subject matter.⁷⁰
- DPS is also charged with establishing a single answering point system for persons to report emergencies involving hazardous substances and oil; the system is designed to support communication among the state agencies responsible for state response to an incident.⁷¹

Changes in 2014

Several aspects of § 115E were changed with the railroad and pipeline safety provisions passed by the legislature and signed by the governor in 2014.⁷² Particularly relevant to response to an oil transportation incident, § 115E now includes several specific provisions related to rail transportation safety:⁷³

- Defines an “incident commander” according to National Incident Management System Guidelines.
- Requires railroads to offer training to each fire department along the routes of unit trains.

⁶⁷ Minnesota Statutes 2014 § 115E.04, subd. 4(b).

⁶⁸ Minnesota Statutes 2014 § 115E.05.

⁶⁹ Minnesota Statutes 2014 § 115E.06 and § 115E.061.

⁷⁰ Minnesota Statutes 2014 § 115E.08.

⁷¹ Minnesota Statutes 2014 § 115E.09. Minnesota Rules 7514 implements this part of the statute through the Minnesota Duty Officer system.

⁷² Laws of Minnesota 2014, chapter 312, article 10

⁷³ Pipeline companies are not covered by the specific provisions described below.

- Requires railroads to communicate annually with emergency managers, fire officers, and others to ensure that response activities are coordinated (beginning June 30, 2015).
- For railroads that transport unit trains of oil or hazardous substances, requires **railroads to “deliver and deploy sufficient equipment and trained personnel to contain and recover discharged oil or hazardous substances and to protect the environment and public safety.”**⁷⁴ Establishes timelines for response activities for railroads if there is confirmation of an oil or hazardous material discharge. These standards and timelines will be effective June 30, 2015.
- Requires railroads to conduct oil containment, recovery, and sensitive area protection drills every three years, as directed by MPCA. This requirement is effective June 30, 2015.
- Requires railroads to submit prevention and response plans to MPCA by June 30, 2015 and every three years thereafter.
- Directs MPCA to engage in environmental protection activities related to rail transportation incidents, including working with local governments and railroads, facilitating cooperation and mutual aid, and evaluating railroad preparedness efforts.
- Directs DPS to engage in public safety protection activities related to rail transportation incidents, including assisting local emergency managers and fire officials with understanding the hazards of oil and other hazardous substances and including response information in preparedness plans, assisting with development of protocols for first responders, and facilitating cooperation among private and public sector organizations.

Pipeline Safety (Minnesota Statutes § 299J)

The statute establishes the Office of Pipeline Safety to enforce federal and state pipeline safety regulations—primarily focused on prevention of incidents. The statute requires pipeline operators to notify the state if there is a release; the state is required to notify local emergency responders and other relevant government entities (such as MPCA).

Particularly relevant to this report, the statute **requires local governments to develop and maintain emergency plans related to pipeline safety, and requires local governments to consult with the pipeline owner or operator when developing the plan.**⁷⁵

Response: State legal framework

Hazardous Materials and Incident Response Act (Minnesota Statutes § 299A.48–299A.55)

The Minnesota Hazardous Materials Incident Response Act established what are now referred to as regional response teams. Important provisions of the statute include:

- Defines chemical assessment teams. They are: 1) “trained, equipped, and authorized to evaluate and, when possible, provide simple mitigation to a hazardous materials incident and 2) required to recommend to the local incident manager the best means of control the hazard ...”⁷⁶

⁷⁴Minnesota Statutes 2014 § 115E.042, subd. 4, emphasis added.

⁷⁵ Minnesota Statutes 2014 § 299J.10.

⁷⁶ Minnesota Statutes 2014 § 299A.49, subd. 2.

- Defines regional hazardous materials response teams. These teams are “trained and equipped to respond to and mitigate a hazardous materials release.” Regional response teams may include chemical assessment teams.⁷⁷
- Required DPS to develop an implementation plan and rules in consultation with identified agencies, appropriate technical response representatives, and affected parties.⁷⁸
- Requires a “responsible person” to pay for all costs of response to a hazardous materials incident.⁷⁹

Responsibilities, training, and equipment standards for the response teams are outlined in Minnesota Rules 7514.0100 through 7514.2000. Team capacities are described in a later section of this report (page 60).

Changes in 2014

In 2014, sections were added to § 299A related to transportation safety preparedness. In particular, a fund was established to provide for additional response teams and preparedness activities. Further discussion of this change is on page 82.

Environmental Response and Liability Act (Minnesota Statutes § 115B)

Among many other provisions related to pollution and cleanup, the Environmental Response and Liability Act establishes that **facilities (including rolling stock and pipeline) are “responsible persons,”** liable for the costs of responding to releases of pollutants, contaminants, or hazardous substances, for removal of the material, and for any damages to natural resources.⁸⁰ The statute also authorizes MPCA to take any removal or remediation actions to respond to release of hazardous substances, pollutants, or contaminants. Before taking action, MPCA must request the responsible party to take action, notify the owner of the property, and determine that the responsible party will not take action within the time requested—in emergencies, MPCA may respond immediately.⁸¹

Related statutes

A number of other state laws are connected to oil and hazardous materials transportation or preparedness and response, but do not directly apply to public safety response to oil transportation incidents. These include:

- Minnesota Statutes 2014 § 299K.01: Hazardous Chemical Emergency; Planning and Response. The state law is the companion to the federal Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as SARA Title III). The law covers stationary facilities that store hazardous materials. Among other provisions, it requires facilities to provide inventory and release reports, establishes regional review committees, and encourages local governments to develop response plans. The **statute requires facilities to pay fees, which are used to**

⁷⁷ Minnesota Statutes 2014 § 299A.49, subd 7.

⁷⁸ Minnesota Statutes 2014 § 299A.50.

⁷⁹ Minnesota Statutes 2014 § 299A.52.

⁸⁰ Minnesota Statutes 2014 § 115B.03.

⁸¹ Minnesota Statutes 2014 § 115B.17.

support administration of the EPCRA program and hazardous materials response. Minnesota Rules 7507.0100 – 7507.0700 implement the provisions of the statute related to fees.

- Minnesota Statutes 2014 § 219, Railroad Safety and Employment. Establishes standards for rail traffic and safety (primarily adopting federal standards). Requires companies to take action to prevent fires on or near tracks, including employing patrollers to discover and extinguish fires during dry seasons in areas potentially overrun by fire. **Requires railroads to reimburse local fire departments for expenses of extinguishing a fire when the emergency is caused by the locomotive, rolling stock, or employee.** If the railroad is subject to property taxes in a jurisdiction, the company is required to pay fees and assessments related to firefighting and protection expenses in the same way as other property owners. In 2014, § 219 was expanded to authorize rail safety inspectors to participate in federal rail safety program disciplines, including hazardous materials programs.
- Minnesota Statutes 2014 § 299F.56–641, Intrastate Pipeline Safety. Adopts standards for pipeline safety (primarily adopting federal standards); requires pipelines to participate in the state’s one-call excavation notice system; requires plans for safe operation of the pipeline; authorizes DPS’s Office of Pipeline Safety to enforce the statute; requires pipeline operators to pay inspection fees and associated support costs. Minnesota Rules 7530.0100 to 7530.5060 implement this statute and provide details on enforcement mechanisms and sanctions.
- Minnesota Statutes 2014 § 115C, Petroleum Tank Release Cleanup. Covers petroleum storage tanks, requires responsible persons to take corrective action in response to leaks or discharges, establishes liability for response costs, and establishes a fund and administrative board to fund corrective actions for petroleum tank releases.

State and local government

State agency representatives and local government and first responder associations provided information on Minnesota’s preparedness and emergency response framework as it relates to oil transportation incidents. Many pointed out that **Minnesota has an all-hazard approach to preparedness, in keeping with well-accepted best practices.** Many state representatives also emphasized that the private sector, **the company responsible for the discharge or spill, is ultimately responsible for responding to an incident.**

Preparedness: State and local government

Local government

Local governments (counties and cities) are responsible for developing emergency preparedness and response plans that would apply to an oil transportation incident. Most local governments do have these types of plans, according to first responder and local government association interviewees.

Currently, **all counties, cities of the first class, and HSEM regions in Minnesota⁸² are engaged in planning and capacity identification aimed at identifying and prioritizing risks and determining what resources may be needed.** This effort is part of a national process known as Threat and Hazard Identification and Risk Assessment (THIRA). The THIRA process has four main steps: 1) identify

⁸² Tribal governments are encouraged to participate.

threats and hazards, 2) put those hazards in context by describing how they may affect the community, 3) establish capability targets, and 4) apply the results of the analysis to estimate the resources needed to achieve the targets.⁸³ Minnesota’s communities are in the process of establishing targets and identifying resources; this is an ongoing process and may take another year or more to complete.⁸⁴

State government

State agencies play a role in guiding and evaluating preparedness and planning efforts.

HSEM provides guidance and advice to local governments to assist them in developing emergency response plans. Emergency response plans should take an all-hazards approach, which may include planning for specific hazards. The MNWALK⁸⁵ tool, for example, **includes planning requirements relating to oil and hazardous materials transportation by rail and pipeline.**

MPCA focuses on the environmental response preparedness for private sector entities that are transporting or storing hazardous materials and petroleum. One of MPCA’s current areas of focus—consistent with legislative changes in 2014—is on evaluating the preparedness of railroads, including reviewing preparedness plans and responses to take-home drills.

HSEM coordinates regular meetings of response entities, including regional response teams and other state agencies, to discuss preparedness and response. Active groups focused on hazardous materials incidents (including oil) include the Technical Advisory Committee (regional response teams) and State Agency Responders Committee (state agency response experts). HSEM also coordinates the state’s Emergency Preparedness and Response Committee (state agency leads for the Minnesota Emergency Operation Plan), which is focused on all-hazards planning and response.

Response: State and local government

Local government

Local governments in Minnesota have “the primary responsibility for meeting the immediate health and safety needs of its citizens in the event of a major emergency/disaster,” though state resources can supplement local governments in certain circumstances.^{86, 87}

⁸³ Minnesota Department of Public Safety, Division of Homeland Security and Emergency Management, “Threat and Hazard Identification and Risk Assessment (THIRA),” 2014. Accessed December 12, 2014, <https://dps.mn.gov/divisions/hsem/homeland-security/Pages/threat-hazard-risk-assess.aspx>.

⁸⁴ Information from HSEM.

⁸⁵ HSEM does not provide templates for local governments for response plans; instead, governments are encouraged to develop locally-specific plans that are consistent with federal and state planning guidance. MNWALK is a resource to allow local governments and plan reviewers to evaluate a preparedness plan. The tool is available at <https://dps.mn.gov/divisions/hsem/all-hazards-planning/Pages/mnwalk.aspx>

⁸⁶ DPS, HSEM. “State of Minnesota Emergency Operations Plan (Official),” September 1, 2013. Accessed December 12, 2014, <https://dps.mn.gov/divisions/hsem/all-hazards-planning/Documents/2013-official-meop-public.pdf>. p. O-1

⁸⁷ Circumstances include when “the needs generated by a major incident exceed the capability of local government to respond, the state has a specialized resource needed by local government, or the scope of the event is widespread and there is a need to utilize a centralized incident management system.” Ibid, p. O-1.

In a response to an incident, local first responders are incident commanders and provide direct firefighting or public safety response within their capabilities. Some areas have city or county hazmat teams.

Regional Response Teams

Regional Chemical Assessment Teams (CAT) and Emergency Response Teams (ERT)⁸⁸ are key components of the state's hazardous materials and oil incident response framework. These contracted regional teams are coordinated by HSEM and receive additional funding and training through HSEM. Typically, these teams are housed in local fire departments, but they can be maintained by private companies.

Regional response teams were initially established in Minnesota because local emergency responders were not trained or equipped to respond to hazardous materials incidents. Based on a report to the legislature, state officials determined that it was not reasonable for each local government to develop its own capabilities. These teams were not intended to replace local programs or to respond to all hazardous incidents; rather they were intended to “support and supplement” local capabilities.⁸⁹

In the years since the regional response team program began, the state has made changes to the program.⁹⁰ In the early 2000s, the state eliminated three ERTs. DPS had reviewed the program and learned that a significant amount of funding was going to support ERTs, but they actually responded to incidents very infrequently. DPS used resources to expand funding to CAT teams and establish a CAT team in a part of the state without a regional team.

Currently, there are ten CATs; two locations with CAT teams also house ERTs. Both CATs and ERTs are trained and equipped to assess chemical events, such as through reading meters and understanding results, and their role is to provide advice to local authorities. ERT teams are larger and have additional capacity compared to CAT teams. Additional information on CAT and ERT capacities are described in a later section of this report (page 60).

State government

State government investigators and regulators are often primarily focused on *preventing* an oil transportation incident, but state agencies are also engaged in response activities.

DPS's Bureau of Criminal Apprehension houses the Minnesota Duty Officer Program. The program supports and staffs a single answering point system. State or local agencies can contact the duty officer at any time to request state assistance in an emergency or to report a hazardous materials spill. If there is a reported incident, the duty officer contacts relevant state agencies.

⁸⁸ The regional ERTs described here are distinct from MPCA's Emergency Response Team (ERT). MPCA's ERT is comprised of MPCA employees who are responsible for coordinating MPCA's response to an oil or hazardous materials incident.

⁸⁹ DPS, State Fire Marshall Division, “In the Matter of the Proposed Rules of the State Fire Marshall Relating to the Hazardous Materials Incident Response Plan and System—Statement of Needs and Reasonableness” March 14, 1994. Accessed December 3, 2014, <http://www.leg.mn/archive/sonar/SONAR-02368.pdf>, p. 1-2.

⁹⁰ Information from HSEM program representative.

In the context of response to an oil transportation incident, hazardous materials experts from MnDOT, HSEM, and MPCA can offer advice to local responders on scene or by phone. The immediate response to an emergency involving hazardous materials would be focused on protecting public safety, public health, and the environment. After a situation is under control from an emergency management standpoint, MPCA's Emergency Response Team provides on scene coordination of spill clean-up.

Minnesota Department of Health (MDH) coordinates Mobile Medical Teams, which can provide medical services during significant incidents. There are two teams in Minnesota—one in central Minnesota and one in the Twin Cities.

State agencies have specific memoranda of understanding as part of the state's emergency operations planning, which could be relied on in case of a significant incident, including an oil transportation incident.

Rail and pipeline companies

Unlike many other emergencies, the private sector would play a significant role in responding to an oil transportation incident. Subject matter experts and other research provided information on the role of rail and pipeline companies in preparedness and response. As described above, additional requirements for rail companies were enacted in the 2014 legislation and will become effective in 2015. This section discusses rail and pipeline companies' general role in the response framework.

Preparedness: Rail and pipeline companies

Rail and pipeline companies are required by law to produce and maintain up to date emergency response plans, including specifically defined "worst case scenario" plans that would guide their actions in all aspects an incident. Companies may be required to provide state and federal officials with their plans for responding to an incident. Information about plan requirements is on page 50.

Response: Rail and pipeline companies

Both state and federal statutes and other binding regulations specify that the responsibility for responding to an oil transportation incident and its aftermath is that of the relevant rail or pipeline company (responsible party).

It is likely that a significant oil transportation incident would exceed the capabilities of most fire departments, particularly those outside of urban areas. Many subject matter experts MAD consulted for this report indicated that in a significant incident involving an oil discharge—particularly if there is a fire—a primary public safety response may be to secure the area and evacuate.

Most company representatives readily agreed, or offered without prompting, that their company was responsible for maintaining and providing the capacity for responding to an incident, including cleanup and mitigation. Many also added that the first priority in the event of an incident was an immediate response, and any determination of culpability and financial responsibility should come later. As an example: One representative happened to be interviewed the day following a rail incident in Saskatchewan, Canada. He pointed out that while it was another company's rail cars involved in the

incident, it was his company's response trailer and other equipment that were the first to respond, as their cached equipment and vehicles were closest to the incident⁹¹.

Federal government

The federal government's primary role in the context of preparedness and response to an oil transportation incident in Minnesota is in regulating the rail and pipeline industry in ways that impact all phases of emergency management (prevention, preparedness, response, recovery, and mitigation). Federal standards and laws establish requirements for certain levels of safety, training of personnel, labeling of rail containers, and adherence to environmental protection standards, that companies must meet. The federal government may be involved in response to an incident, particularly if the incident occurs on or near water, or if the incident requires federal disaster assistance. Federal involvement with a state's incident preparedness and response framework also may include providing training and guidance.

Additionally, federal guidelines and best practices recommendations underpin most state and local regulations and requirements, and to some extent their response frameworks and preparedness efforts.

Because of the interstate nature of their operations, their role in national energy, transportation, commerce, defense, and other areas, rail and pipeline oversight crosses many federal agencies. These include the U.S. Departments of Transportation, Defense, Homeland Security, Commerce, and Energy, as well as the Nuclear Regulatory Commission.

Likewise, many federal agencies are involved in aspects of oil transportation from the emergency management perspective, including the Environmental Protection Agency (EPA)⁹², the United States Coast Guard (USCG)⁹³, and the Federal Emergency Management Agency (FEMA). For the focus of this report, the most applicable federal entities are the Pipeline and Hazardous Materials Safety Administration (PHMSA), the Federal Rail Administration (FRA), and the National Transportation Safety Board (NTSB), all of which are part of the U.S. Department of Transportation (DoT).⁹⁴

Preparedness: Federal government

National Response Framework

The federal government organizes its response responsibilities and plans under a framework known as the National Response Framework and its "Emergency Support Functions" (ESF), which many local

⁹¹ Other comments from railroad and pipeline company representatives are in Appendix A.

⁹² The EPA is the lead federal agency for inland oil spill incidents. Among other duties, EPA also plays a role in the implementation of Emergency Planning and Community Right-to-Know Act (also known as SARA Title III), which primarily deals with facilities that store hazardous materials

⁹³ USCG is the lead for coastal zone incidents

⁹⁴ The Minnesota Pollution Control and Homeland Security and Emergency Management Agencies play significant roles in rail and pipeline oversight, safety, preparedness, and response, but the roles of their federal counterparts, the U.S. EPA and Department of Homeland Security are much more removed in comparison. Minnesota's state agency roles are described in greater detail in other sections of this report.

and state agencies have adopted and tailored for their own use.⁹⁵ The “Emergency Support Function #10 – Oil and Hazardous Materials Response Annex” is one such example of the federal response plan for an oil incident.

National Preparedness Policy Directive 8

The federal government has in recent years developed a more evolved framework to guide preparedness at all levels. The most recent such promulgation was Presidential Policy Directive 8: National Preparedness (PPD-8), issued by President Barack Obama on March 30, 2011. According to the Congressional Research Service,

PPD-8 provides a guide as to how the nation, from the federal level to private citizens, can prevent, protect against, mitigate the effects of, respond to, and recover from those threats that pose the greatest risk to the security of the Nation including acts of terrorism and other human caused incidents (such as oil spills) and natural disasters.⁹⁶

This and related emergency response frameworks contain a number of components and concepts that many interviewees cited in their responses to MAD. These include the:

- “All-hazards” emergency response model, which is an approach to preparedness and training that avoids focusing on a single type of incident, such as a train fire, pipeline explosion, or a waterway oil spill, or on a single hazmat type.
- National Incident Management System (NIMS);
- Incident Command System (ICS);
- National Oil and Hazardous Substances Pollution Contingency Plan, which establishes the procedures for the federal response to a chemical or oil spill.

Response plan requirements for rail and pipeline companies

Federal laws require certain companies to have emergency response plans, and they establish plan requirements. Such plans do not necessarily specify involvement of a federal agency, though they may in certain cases.⁹⁷

Pipeline companies

At the federal level, the most pertinent requirements for pipelines to prepare an oil spill response plan include 49 CFR parts 190-195. Part 194 contains the requirement for companies to prepare and submit

⁹⁵ U.S. department of Homeland Security, “National Response Framework.” Second Edition, May 2013. Accessed December 9, 2014, http://www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf.

⁹⁶ Congressional Research Service. “Federal Emergency Management: A Brief Introduction.” R42845. November 30, 2012. Accessed December 12, 2014, <https://training.fema.gov/hiedu/highref/federal%20em-a%20brief%20introduction-r42845%20-%20lindsay.pdf>, p.4. For a more detailed look at PPD-8 and a description of the overall federal response to national disasters and emergencies see the Department of Homeland Security’s May 2013 *National Response Framework*, available at http://www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf.

⁹⁷ Nuclear and Department of Defense facilities, as well as any incident that would be considered a national security-related or terrorist event, would involve federal agency response planning. Such incidents are beyond the scope of this report.

spill response plans (49 CFR § 194.107). Also included is a requirement to prepare and submit a separate distinct plan for a “worst case discharge” (49 CFR § 194.105), and the submission of a state plan (49 CFR § 194.109). Standards are set for response times for worst case scenarios in certain areas. (49 CFR § 94.115). If the requirements of a state’s plan exceed that of the federal requirement, then the state plan suffices to meet federal requirements.

In summary, 49 CFR § 194.107 requires that each response plan,

- Include procedures and a list of resources for responding to a worst case discharge and to a substantial threat of such a discharge.
- Certifies that the company is familiar with the National Contingency Plan and each applicable Area Contingency Plan, and their requirements for notifying and interacting with the federal government in the event of an accident. Companies must demonstrate their ability to meet the stipulations of each of these plans.
- Include a core plan consisting of,
 - An information summary as required in §194.113, immediate notification procedures, spill detection and mitigation procedures, the name, address, and telephone number of the oil spill response organization, if appropriate, response activities and response resources, names and telephone numbers of Federal, State and local agencies which the operator expects to have pollution control responsibilities or support, training procedures, equipment testing, a qualifying drill program, plan review and update procedures;
- An appendix for each response zone;
- A description of the operator's response management system.⁹⁸

Rail companies

Federal requirements for rail company’s oil spill response plans include those found in 49 CFR part 130, “Oil Spill Prevention and response plans.”⁹⁹ In summary, plans must address the following:

- Range of response scenarios that foreseeably could occur;
- Qualified individual, the alternate qualified individual, and all other personnel with a role in spill response;
- Training, including drills, required for each of these persons;
- Equipment necessary for response to the maximum extent practicable in each of the identified scenarios;
- Means by which the availability of personnel and equipment will be ensured to respond to a spill to the maximum extent practicable;
- Governmental officials and others to be notified in the event of a spill, and the notification procedure to be followed;
- Means for communicating among responsible personnel and between personnel and officials during a response; and
- Procedures to be followed during a response.

⁹⁸ 49 CFR 194.107.

⁹⁹ 49 CFR 130.

Training standards

Adequate training is an important element of preparedness. The federal Occupational Safety and Health Administration (OSHA) sets training requirements for certain personnel directly working with hazardous materials.¹⁰⁰ Employers are required to provide training to all personnel expected to be directly involved in a hazardous substance release incident. These “specialist employees”¹⁰¹ receive training that qualifies them at certain levels of emergency response. These designations are the:

- first responder awareness level;
- first responder operations level;
- hazardous materials technician; and,
- hazardous materials specialist.¹⁰²

Training requirements, including exceptions, are as follows:

Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.

Exception #1: an employer need not train all employees to the degree specified if the employer divides the work force in a manner such that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully-trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside fully-trained emergency response team for assistance.¹⁰³

Though not a federal agency, the National Fire Protection Association (NFPA) has similar but slightly different guidance regarding “flammable and combustible liquids,”¹⁰⁴ which are also considered

¹⁰⁰ These activities are defined at 29 CFR, Part 1910.120(a)(1).

¹⁰¹ “Employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge, shall receive training or demonstrate competency in the area of their specialization annually.” 29 CFR 1910.120(q)5.

¹⁰² More detailed descriptions of the qualifications required for each designation may be found at 29 CFR 1910.120(q)(6).

¹⁰³ 29 CFR 1910.120(p)(8)(iii)(A).

¹⁰⁴ National Fire Protection Association, “NFPA 30: Flammable and Combustible Liquids Code.” Accessed December 15, 2014, <http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=30>.

industry standards. Many interviewees referred to both OSHA and NFPA requirements in their answers to questions about response preparation and training.

Many rail and pipeline companies also told MAD that they send their employees to “fire schools” or similar training programs and drills that are either run by the federal government, to include courses and activities based on federal government guidelines, or are conducted by federal government instructors. Some companies also pay for local emergency responders to attend such programs. Prominent examples include the National Fire Academy (NFA) in Emmitsburg, Maryland; the Security and Emergency Response Training Center (SERTC) in Pueblo, Colorado, which offers a four-hour, web-based “Crude by Rail” class in addition to onsite training; and Texas A&M’s Engineering Extension Service.

Response: Federal government

Federal action after an oil incident would typically be during the recovery phase; for example, FEMA may be called on to provide recovery assistance in an area affected by a significant incident.

Direct involvement of a federal government entity in a response effort would coincide with an incident response area that includes a waterway. For example, in many areas of Minnesota bordering Lake Superior, the Mississippi River, or another major waterway, the U.S. Coast Guard (USCG) is often part of the area’s response plan. In some areas, the National Parks Service or the Army Corps of Engineers may be involved in response or recovery efforts.

Detailed guidance for the federal response to an actual oil by rail or pipeline incident are largely focused on dealing with the discharge or release of a hazardous substance from such an incident, and not as much with responding to any resultant fire, explosion, injuries, or other physical damage. Information for that type of response exists, but primarily as guidance for local and state responders, and for coordination, if necessary, with federal-level personnel. Further, most federal-level overlap with an oil-related transportation incident relates to responding to and mitigating the environmental effects of the aftermath of a hazard spill or release¹⁰⁵.

Developments at the federal level

The federal government is considering enhanced regulations for rail transport. This proposed rule, “Hazardous Materials: Oil Spill Response Plans for High-Hazard Flammable Trains,” was announced by PHMSA in August 2014.¹⁰⁶ The federal proposal largely stems from recent high-profile rail incidents that called into question whether shale crude oil is more volatile than other oil, and thus should require a different level of precaution, and whether modern rail cars need safety design improvements. Further, due to the increased volume of oil being transported in recent years, the proposed regulations would implement enhanced reporting requirements at different volume thresholds than are currently

¹⁰⁵ Guidance in this area is outlined in the Oil Pollution Act of 1990 (OPA 90). Subsequent modifications, particularly regarding Oil Spill Response Organizations (OSROs), have been added since OPA 90, but, again, those are almost entirely within the realm of spill response and recovery under the auspices of the EPA and USCG.

¹⁰⁶ Federal Register, “Hazardous Materials: Oil Spill Response Plans for High-Hazard Flammable Trains.” Accessed December 12, 2014, <https://www.federalregister.gov/articles/2014/08/01/2014-17762/hazardous-materials-oil-spill-response-plans-for-high-hazard-flammable-trains>.

in place for rail tank cars that transport hazardous liquid materials. In addition to the proposed safety upgrades, the regulations would impose additional coordination, personnel, equipment, and training and documentation requirements.

PHMSA also recently released an updated safety and preparedness advisory, the “Commodity Preparedness and Incident Management Reference Sheet.”¹⁰⁷ In addition to underscoring an increased need for attention to preparation and overall vigilance in light of recent increases in the volume of oil transported, the advisory notes that **“most emergency response organizations will not have the available resources, capabilities or trained personnel to safely and effectively extinguish a fire or contain a spill of this magnitude (e.g., sufficient firefighting foam concentrate, appliances, equipment, water supplies).”** It goes on to summarize important hazard awareness and rail safety precautions, as well as recommending a framework for “pre-incident planning and preparedness.”

The recommendations are, in summary, emergency responders *should*:

- Identify the rail carriers of hazardous materials moving through their communities and determine whether crude oil is one of the products being transported.
- Identify specific points of contact for each rail carrier, including specific personnel responsible for hazardous materials transportation.
- Make sure that their emergency response and operations plans include 24-hour contact information for the appropriate rail personnel.
- Identify state and local environmental protection agency representatives to identify potential air monitoring and spill containment resource capabilities, and include this information in their emergency response plans.
- Determine from the USCG and other relevant agencies the assistance they would be able to provide in the event of a spill or other hazardous materials release.
- Include an annex in their emergency response plans that are specific to oil transportation response, including:
 - hazard analysis that identifies the potential risks to people and property
 - emergency contact lists
 - resource listings
 - equipment inventories
 - foam and water supply requirements for operations at remote sites
 - incident management system roles and responsibilities
 - mutual aid response assets
 - law enforcement scene security and control operations
 - support and recovery assets

¹⁰⁷ PHMSA, “Commodity Preparedness and Incident Management Reference Sheet.” Accessed December 12, 2014, http://www.phmsa.dot.gov/pv_obj_cache/pv_obj_id_157A75A27FDC85D2FDCf0A8A6A02D50487BE0200/filename/Petroleum_Crude_Oil_Reference_Sheet.pdf

Conclusions

The state's emergency response framework is comprehensive and allows state agencies and local government to take an all-hazards approach, allowing for adaptation of plans and response capacity to specific hazards and risks. Local governments and regions are developing capability targets and identifying resources to address possible gaps in their response capabilities.

HSEM coordinates planning and response efforts through its regions. The regional approach to hazardous materials response (Chemical Assessment Teams and Emergency Response Teams) was developed in the early 1990s with the realization that local governments would not be able to maintain capabilities (particularly trained staff) to respond to a significant incident.

Under state and federal law, Minnesota has a comprehensive framework that would apply to an oil transportation incident:

- Railroad and pipeline companies are ultimately responsible for responding to an emergency involving the substances they transport. They must have plans in place to prevent and respond to discharges, and they must pay any costs associated with responding to a discharge.
- State agencies, particularly DPS and MPCA, have responsibilities associated with evaluating preparedness, coordinating agency response, and providing advice and resources to local governments during significant emergencies.
- Local governments are responsible for ensuring public safety in their communities; in all but the most catastrophic incidents, local officials are the incident commanders. Local governments develop plans to respond to emergencies that may affect their communities, and they are empowered to develop mutual aid and interjurisdictional organizations.
- Minnesota's statutory framework places an emphasis on coordination and collaboration across governments and sectors.

Additional provisions for preparedness have been recently established in state statute for rail companies, but they do not apply to pipeline companies.

A key difference between the new Minnesota standards for rail companies and the current federal requirements for rail and pipeline companies is that the Minnesota statute will establish set timelines for rail companies to respond to any discharge, not only worst case discharges.

Minnesota's Capacity to Respond to an Oil Transportation Incident

Section Overview

Legislative requirements addressed in this section (dark text):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2;
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

Before considering what additional resources may be needed to enhance Minnesota's public safety preparedness for an oil transportation incident, it is necessary to consider current capacity.

This section provides information on:

- Private sector resources
- State government resources
- A map of identified private and regional emergency response equipment
- Local government resources

Several notes are necessary as preface to this section:

- Considering information from state experts and other sources, it became clear early in the research for this project that very few local governments have access to the major response equipment necessary to respond to a significant oil transportation incident. The equipment inventory described below is based on information from private sector resources and state regional response teams. It is as comprehensive as is feasible.
- Both public and private sector organizations expressed concerns about publicizing details of response capacity because the information could be used by individuals with negative intent. The inventory presented here is based on broad categories of response equipment and approximate locations.

- Research revealed that equipment and mutual aid agreements are only two components necessary for effective public safety response to an incident. Other relevant capacities include emergency plans, training, and preparedness exercises. The examination of capacity in this section and the discussion of capacity development in the next section take these other capacities into consideration.

Private Sector Resources

Rail and pipeline companies maintain that they are ready and able to respond to an oil transportation incident, noting that they have their own firefighting and spill response resources in Minnesota and other states and that they have contractual relationships with other responders. MAD obtained and reviewed information from companies to identify major private sector response capacities.

Industry representatives often referred MAD to their oil spill response plans for specific equipment-related answers to interview questions, and indicated that they are sufficiently prepared to respond to an incident, or told MAD they are in compliance with state and federal requirements. Alternatively, there were many references to reliance on Oil Spill Recovery Organization (OSRO) or other contractors. One company also cited what sounds like fairly advanced technology for identifying available response resources based on being notified of an incident and its location, describing a combination of technology that uses geo-information and local company response personnel information pre-loaded into their call-center system for providing instantaneous names, direct phone numbers and locations of local personnel and equipment contractors; another company described efforts at developing these types of systems.

Interviewees described their equipment capacity and response resource location planning in various ways, as characterized by the following composite, summarized, examples:

- *We have a lot of equipment—ladder truck, pumper truck, foam tanker, three foam trailers that hold more foam and a 1,500 gpm nozzle, 3 primary, large enclosed trailers just for hazmat response, decontamination trailer, trench rescue trailer, hazmat truck with suits, SCBAs, and a bunch of other equipment. We have a rescue truck for confined space or high-angle rescue, and three boats and plenty of boom for a river incident.*
- *We think the 100–150 mile radius for response is adequate. We don't think that having these foam trailers everywhere would change any outcomes. When we show people our foam trucks and explain, people get it. But initially, when we say we hope for a 2 hour response ... they picture our foam trailer being a fire truck and we just need to drive it there and start pumping.*
- *For spill response we have hazmat contractors with booming equipment and skimmers. We have a water spill response trailer in Minneapolis. For firefighting we have large foam trailers. One is in Fargo/Dilworth one is in Minneapolis and one in LaCrosse. We aim for 100 to 150 mile radius of crude and ethanol routes. We have the equipment necessary to respond and contain pipeline releases and other incidents that could possibly occur.*
- *We don't have a foam trailer in Minnesota. We have one in Des Moines and in Chicago. We evaluate location based on what we are moving. We are pretty contractor-dependent in Minnesota; all together, we have good response capabilities. We have boats with boom, we have contractors.*

- *[How quickly can you be onsite?] Depends on location and weather, but normally one of our hazmat reps or contractors will be there within 2 hours. Compared to other states, we have quick response times in Minnesota. In other states, we just don't have people everywhere — there's a large territory with few population centers. The response time there may be 5 hours.*
- *[Talk about the trigger for an incident] The call comes in to us. We look at location. Depending on what's going on, we call out all of our closest resources and roll the closest fire trailer. In the early stages of incident, we get hazmat resources rolling. We're in a good position in hazmat. If a back hoe is important — we'll have 2 or 3 in case. We bring lots of resources that may not be used.*
- *Internal resources in Minnesota are spill trailers located and supplied with the appropriate equipment to respond effectively and contain spills throughout the state. Also, our OSRO would arrive within the guidelines required by regulation [49 CFR 194.115].*
- *The company has containment boom and personnel located along the pipeline system. In addition, there are three oil spill recovery organizations in the state and numerous others within 10–12 hours of activation. [Where are these resources located?] Minneapolis/St. Paul area as well as Fosston.*

Locations of Emergency Response Resources

From oil spill response plans and other information provided to MAD, sufficient detail existed to identify the location and categories of equipment that most rail and pipeline companies maintain in Minnesota, and within Minnesota-response zones located in nearby states or Canada. In some cases, MAD cross-referenced information provided by one organization or company with information provided by another. For example, MAD obtained a map of the U.S. and southern Canada with various icons across the country denoting locations of different company's equipment caches, and cache type (e.g. response trailer, fire trailer, boat, CAER cache, etc.). By comparing information provided by others, MAD was able to make a good judgment as to the location of certain resources. In most cases the resource described was primarily for use in spill response and recovery rather than related to fire response, though distinctions were not always clear.

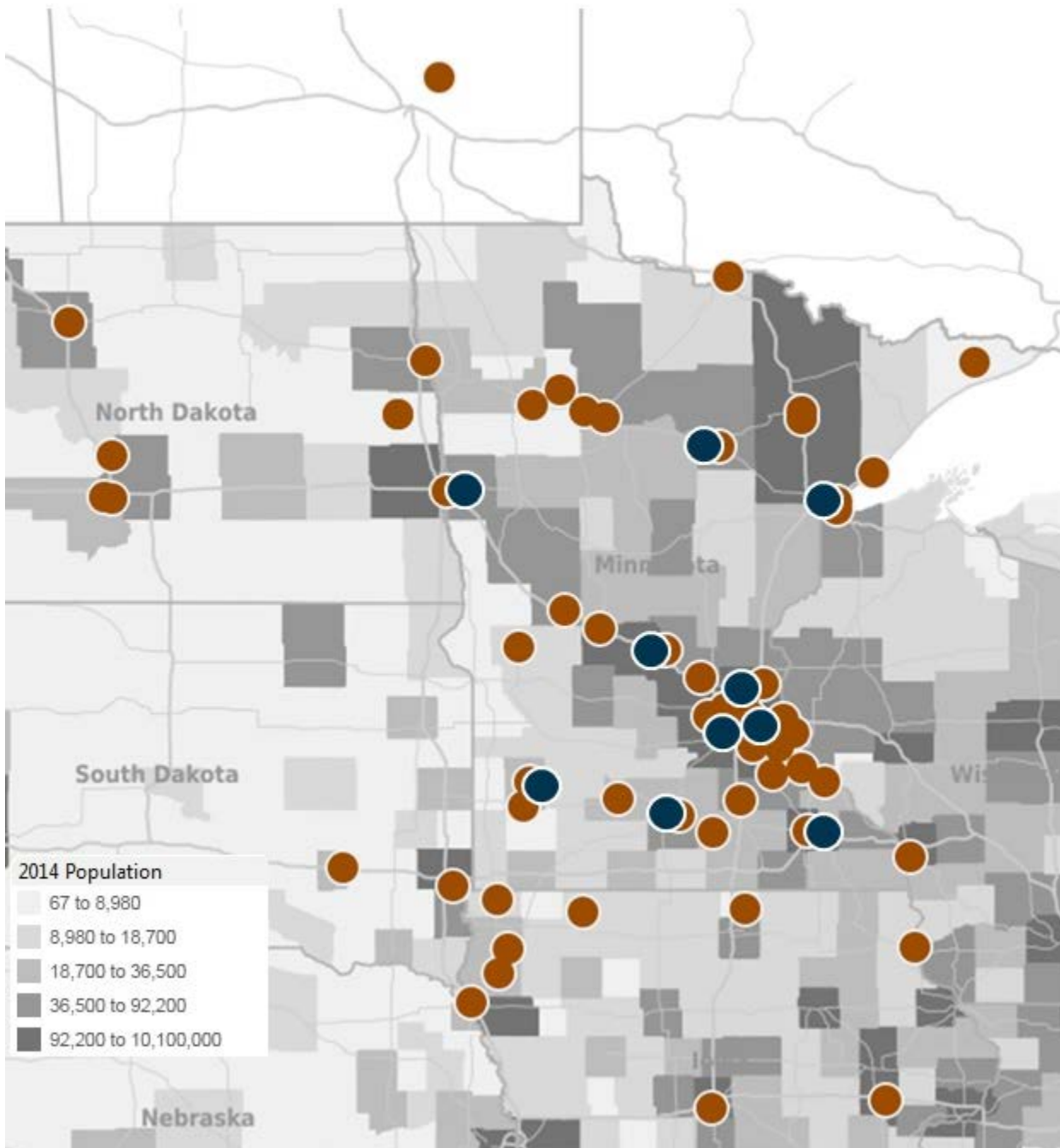
Given the information available and the scope of this study, MAD did not draw any conclusions regarding the amount of equipment available or response times to specific locations in Minnesota.

In the map below, MAD used a general rule of thumb of including resources within 300 miles of the Minnesota border — companies identified many other important resources within their identified response zones but outside the boundary set by this rule of thumb.

The map below (Figure 3) of private sector resources and state regional response teams (described in the next section) indicates that resources are spread across the state and in bordering states, generally clustered in more heavily populated areas.

Figure 3. Response Resources—Private Sector Resources and Hazmat Regional Response Teams (CAT/ERT)¹⁰⁸

Orange dots represent private sector resources. Blue dots represent hazmat regional response teams.



¹⁰⁸ Locations are approximate. Data sources and limitations are described in text. Map created using Tableau Public.

State Government Resources

MAD conducted interviews with state agency representatives and gathered information on state government capacity to respond to an oil transportation incident.

As described above in the discussion of the state's response framework, state agencies are primarily responsible for prevention, plan evaluation, and coordination prior to an emergency. State agencies do have specific response capacities that can be deployed if there is an oil transportation incident. These include state agency expert advisors and Chemical Assessment Teams/Emergency Response Teams.

State agency expert advisors/first responders

State agencies with responsibilities under the state's hazardous materials laws will be contacted by the state duty officer if there is a hazardous materials or oil incident. HSEM, MnDOT, and MPCA would be the primary responders in an oil transportation incident (though Agriculture, Health, and the State Patrol may also be involved, depending on the circumstances). State agency responders are on call 24 hours a day, seven days a week; they can provide expert advice by phone or in person to on-scene first responders, and they can deploy state or regional resources if needed.

Hazardous Materials Regional Response Teams

Regional Chemical Assessment Teams (CATs) and Emergency Response Teams (ERTs) were established in the early 1990s to enhance the state's preparedness to hazardous materials incidents by supporting local first responders.

Regional response team resources

CATs must have a minimum of nine trained personnel per team, while ERTs must have at least 30 trained personnel (four specialists, four technicians, and one medical support officer on duty at all times). Both CATs and ERTs are trained and equipped to assess chemical events, such as through analyzing and explaining information from monitoring equipment.¹⁰⁹

CATs are equipped and trained to perform simple mitigation tasks and basic decontamination, but their main role is to assist local incident commanders in recognizing and identifying the hazard so local responders can respond appropriately. Specifically, CATs are trained and equipped to engage in "sampling for identification of unknown substances, air monitoring, plume projection, evacuation/sheltering recommendations, over pack/containment of a container and sample collection ..." but local authorities retain incident command.¹¹⁰

ERT teams are larger and have additional capacity compared to CAT teams, and they have additional mitigation resources to assist local responders. An ERT "may take action necessary to protect life, property and the environment from the effects of a hazardous material release. Their actions include

¹⁰⁹ Information from HSEM program representative and Minnesota Department of Public Safety "2013 Annual Report to the Legislature: The readiness of state government to respond to discharges of oil or hazardous substances," 2013. Accessed December 9, 2014, <http://archive.leg.state.mn.us/docs/2014/mandated/140177.pdf>.

¹¹⁰ Ibid. p. 5.

preventing a hazardous release, mitigating the effects of the release and stabilizing the situation.”¹¹¹ As with CAT teams, an ERT is not the incident commander in a local incident.

CATs and ERTs are not typically involved in environmental clean-up or waste disposal, though Minnesota Rules 7514.0900, subp. 5 allows an ERT at its discretion to stay on scene to support clean-up operations if requested by an incident commander.

Equipment

CATs have the following equipment available to them in a response. ERTs have the same types of equipment as CATs, but they have more robust capacity in the spill mitigation supplies, spill control supplies, and moving tools categories.

- Chemical reference and emergency reference materials
- Personal protective equipment
- Spill and leak control supplies and equipment, including shut-off valves
- Spill mitigation supplies and equipment
- Decontamination equipment
- Radio and other communication equipment
- Computer equipment
- Monitor and detection equipment; calibration equipment
- Basic suppression equipment
- Assorted non-sparking hand and other tools
- Incident management and administration tools and supplies
- Moving tools
- Vehicles and trailers
- First aid supplies and equipment
- Other supplies and tools (such as traffic cones, tents, cameras, binoculars)¹¹²

Team deployment and location

Teams must be prepared to be “out the door” and on their way to respond to an incident within 15 minutes of notification. Teams are strategically located across the state to allow for a response within two hours or less; however, because of locations of teams, less populous parts of northern Minnesota may experience a longer response time.¹¹³

There are currently ten CATs in the state (these are shown in the map in Figure 3):

- Duluth
- Grand Rapids
- Hopkins
- Mankato

¹¹¹ Ibid., p. 5

¹¹² List compiled from information supplied by HSEM and Minnesota Rules 7514.1400. Notably, CAT teams currently have equipment capacities that are beyond the minimum set by Rule. HSEM explained that CATs have been strengthened in recent years because of available federal funding and because of the reduction in numbers of ERTs.

¹¹³ Information from HSEM program representative.

- Marshall
- Moorhead
- North Metro (Blaine, Coon Rapids, and Fridley fire departments)
- Rochester
- St. Cloud
- St. Paul

Both St. Paul and Moorhead also house ERTs¹¹⁴—the Moorhead team was established in 2014 with funding from the newly established Railroad and Pipeline Safety Account.

HSEM personnel determine whether a CAT or ERT should be deployed. In some cases, more than one CAT team may be sent to respond to an incident.

Local Government Capacities

MAD conducted a survey of fire departments, emergency managers, police departments, and sheriffs' offices in communities that could be affected by an oil transportation incident. MAD also asked local government and first responder associations for their assessments of local government capacities to respond, and MAD received information on local capacity from state agency representatives familiar with local response to incidents. The information in this section is compiled from these sources. Detailed summaries of the survey results and interviews are in the appendices.

Mutual aid agreements

The local government mutual aid infrastructure in Minnesota is well-developed: Three-quarters of the first responder organizations surveyed (75%) reported that they have mutual aid agreements in place that would apply to an oil transportation incident. A large majority (76%) indicated that mutual aid agreements are sufficient. According to first responder and local government associations interviewed for this study, most communities have mutual aid agreements in place with their surrounding communities.

Fire departments and their mutual aid counterparts along rail routes and pipelines are displayed on maps in the Background section of this report (Figure 1 and Figure 2, page 29).

Emergency plans

In many areas, existing emergency operations plans cover oil transportation incidents.

About two-thirds of the first responder departments surveyed (64%) indicated that an oil incident response is part of their Emergency Operations Plan, Threat Hazard Identification Risk Assessment (THIRA) or Hazard Mitigation Plan. Most departments that have oil incident response as part of their plans report that the plans have been updated recently.

Interviewees from state agencies, local government associations, and first responder associations also said that plans cover oil transportation incidents. Some interviewees emphasized that local

¹¹⁴ It is important to note that an ERT is essentially an expansion of a CAT, not a separate group of staff and resources.

governments are required to consider locally specific hazards (such as pipeline or railroads transporting hazardous materials) in their all-hazards planning.¹¹⁵

Notably, **those organizations with oil incident response as part of their emergency operations, hazard mitigation plan, or THIRAs were much more likely to report having training on oil incident preparedness than those without plans.** Among those with oil incident response as part of their plans, 62 percent said someone on their staff had been through oil incident response training, while among those without oil incident response as part of their plans, only 37 percent had that kind of training. Additionally, **those with oil incident response as part of their plans were more likely to have participated in more preparedness exercises.**

Response equipment and other resources

Equipment and resources necessary to respond to an incident are not viewed as being readily available to local governments through the public or private sector.

Familiarity with private and regional resources

First responders surveyed are relatively unfamiliar with private sector resources and regional response team resources.¹¹⁶ Over half (54%) of survey respondents rated their familiarity with private sector resources as low (a one or two on the scale); and about 40 percent rated their level of familiarity with regional response team resources as low.

Table 3. Responder familiarity with private sector and regional response team resources

On a scale of 1 to 5, how familiar are you with available resources from the private sector	... from regional response teams
Not at all familiar - 1	21%	10%
2	33%	29%
3	24%	28%
4	16%	19%
Very familiar - 5	3%	11%
Did not answer	3%	3%

Available resources

Survey respondents were asked to identify resources available from the public or private sector that would be available within 30–60 minutes after an oil spill incident. Nearly all first responders indicated that general fire equipment was available within this time period. However, only about half (56%) said that specialized firefighting equipment was available that soon after an incident. About two-thirds said access to a HAZMAT team was available, and 59 percent said spill containment equipment was available (Figure 4).

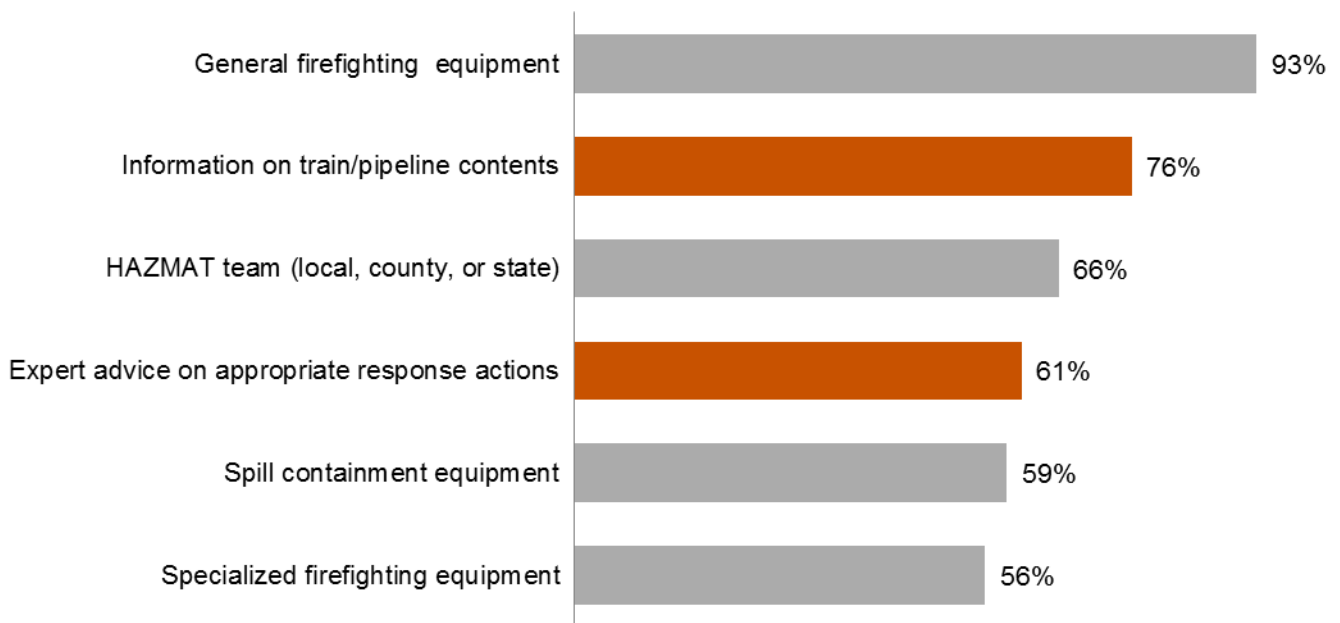
¹¹⁵ As noted on page 40, emergency plans developed in Minnesota should include consideration of both rail and pipeline incidents.

¹¹⁶ Private sector resources would include resources from railroad and pipeline companies, and regional response team resources would include Chemical Assessment Teams and Emergency Response Teams.

While one might expect information resources to be readily available to *all* first responders within the 30–60 minute timeframe, about three-quarters (76%) said information about train and pipeline contents was available during that time period, and three in five (61%) said expert advice on appropriate emergency response actions was available.

It is important to consider context when interpreting the results in Figure 4—relatively few respondents said that they were familiar with private or regional response team resources, and perceptions regarding available equipment are necessarily influenced by level of awareness of resources outside of a respondent’s jurisdiction.

Figure 4. Some response resources are reportedly available within 30–60 minutes of a spill. Information resources are readily available to the majority of respondents, but not to all.



Interviewees from state agencies, local government associations, and first responder associations agreed that **most local governments do not have sufficient equipment and training to respond to a significant oil transportation incident**. Some emphasized, however, that local governments are not the primary responsible party for an oil transportation incident—the rail or pipeline company is responsible.

Training and exercises

Training and preparedness exercises on oil incident response are not universal among local governments.

About half of the first responders surveyed (52%) said their departments have staff members who have received training in how to respond to an oil transportation incident. Among them about three in five (59%) said the training was sufficient. Among those who have received training, less than half indicated a quarter or less of their staff had received training, while one in six (17%) said more than

three-fourths has received training. About one in eight (13%) said they didn't know what percentage of their staff has received training.

Most organizations report having had no oil transportation incident preparedness exercises since July 1, 2013. Two-thirds (66%) said they had none, while about a quarter (27%) said they had one. Four percent said they had two or more. **A large majority (88%) of those who had exercises reported that they had enhanced the jurisdiction's preparedness efforts.**

Conclusions

Capacity to respond to protect public safety in an oil transportation incident involves a combination of components; equipment, trained personnel, emergency plans, mutual aid agreements, and exercises to test preparedness are all important. The private sector has resources across the state that would be available to respond to an oil transportation incident, and the state-coordinated CAT and ERTs could provide assistance to local responders. Developing a comprehensive inventory of resources was challenging because of inconsistent definitions, standards, and quality of information regarding response resources.

The local government mutual aid infrastructure in Minnesota is well-developed, and most counties and cities have emergency plans that would apply to an oil transportation incident. First responders surveyed for this study are relatively unfamiliar with private sector resources and regional response team resources.

Experts consulted for this study agree that local governments generally do not have the equipment or personnel to respond to a significant oil transportation incident, such as a large spill or fire. Some emphasized, however, that local governments are not the primary responsible party for an oil transportation incident—the rail or pipeline company is responsible.

Developing Minnesota's Preparedness and Response Capacity

Section Overview

Legislative requirement addressed in this section (dark text):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2;
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

As discussed in the preceding sections, preparedness and response capacity involves more than training and equipment—although those are obviously important elements to an organization's ability to respond to an oil transportation incident. Other important factors include awareness, planning, coordination, and collaboration. The discussion of capacity development in this section addresses these various aspects of preparedness and response.

This section provides information on:

- Development areas from the perspective of local first responders
- Development areas from the perspective of elected officials
- Development areas from the perspectives of subject matter experts
- Changes underway at the state and local level to enhance preparedness
- Options for additional preparedness efforts
- Associated costs for options

Local Government Capacity Development—First Responder Perspectives

The information in this section is based on responses from the survey of fire departments, emergency managers, police departments, and sheriffs from areas that could be affected by an oil transportation incident. The complete analysis and report of survey results are in Appendix B and C.

Perceptions of preparedness

First responders' perceptions of preparedness are particularly important to identifying capacity development needs.

The survey asked respondents to consider the availability of public and private resources, and then rate their jurisdiction's ability to respond to an oil transportation incident, using a scale of 1 (poor) to 5 (excellent). **None of the 157 first responders rated their area's preparedness as excellent. The average rating is 2.6** on a 1–5 scale. The map below (Figure 5) shows the wide range of preparedness perceptions across Minnesota.

To better understand survey respondents' perceptions of preparedness, analysts developed three indices focused on: 1) awareness and familiarity; 2) planning, training, and exercises; and, 3) resource availability (these indices are described in detail below). When these indices were analyzed with responses to the survey question regarding perceptions of oil incident preparedness, a significant pattern emerged; all three indices are significant predictors of how well prepared responders report their government is to respond to an oil incident. The planning, training, and exercise index was the most important predictor of high perceptions of preparedness, while availability of resources was the least important predictor.

Put differently, **the survey data provides support for a common-sense emergency management perspective: organizations that are familiar with hazards and aware of resources; that engage in planning, training, and exercise; and that have resources available to respond will consider themselves to be better prepared for an incident.** Further, **a combination of planning, training, and preparedness exercises is a better predictor of high perceptions of preparedness than availability of resources.**

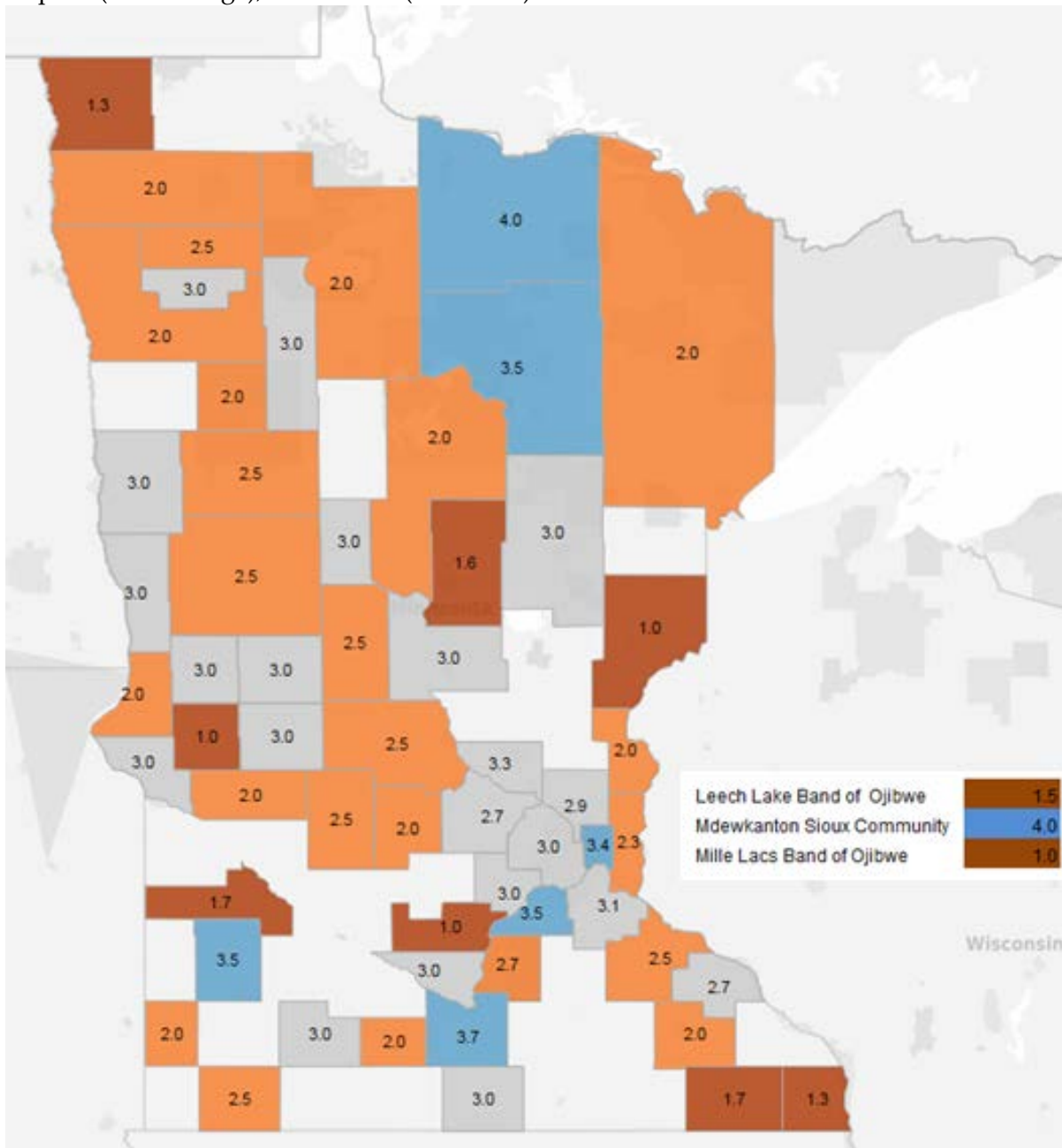
Perceptions of oil incident preparedness versus other hazardous materials preparedness

In addition to the survey question regarding preparedness to an oil incident considering public and private resources, the survey also asked first responders to rate their jurisdiction's ability to respond to an oil spill incident compared to other hazardous materials incidents. Overall, the average response was similar: 2.5 on a 1–5 scale where one meant much less prepared, three meant about the same, and five meant much more prepared.

The correlation between these two questions was quite high. There are two primary possibilities for this correlation: survey respondents may not have seen these questions as distinct; or survey respondents may have concerns about hazardous materials response *generally* that warrant future exploration.

Figure 5. Perceptions of preparedness by counties in Minnesota¹¹⁷

1 =poor (dark orange); 5=excellent (dark blue)



¹¹⁷ Data combines responses from all fire departments, police departments, sheriff's offices, and emergency management departments within a county or tribal area to the survey prompt "Considering public and private resources available to respond to an oil transportation incident, rate your city/county/tribal government's ability to respond to an oil transportation incident." Map created with Tableau Public.

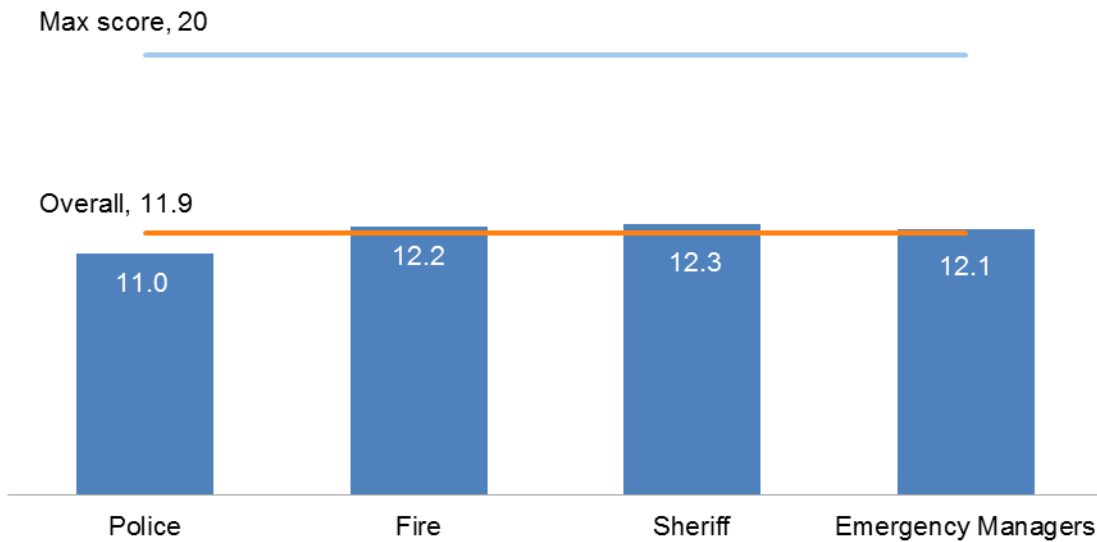
Awareness and familiarity

Survey respondents were asked questions regarding their awareness of rail and pipeline contents and their familiarity with private sector and regional response resources.¹¹⁸ Combining answers to these questions creates an index that can be used to identify areas of potential capacity development. The average score for all survey respondents was 11.9 out of a possible score of 20. About a quarter of first responders (23%) gave lower responses scored low through nine. Another 38 percent gave low-to-moderate responses of 10–12. About a third (30%), gave moderate-to-high response. Nine percent gave the highest responses, 16-20.

The figures below (Figure 6 and Figure 7) show the familiarity index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents. The light blue line shows the maximum score for this index.

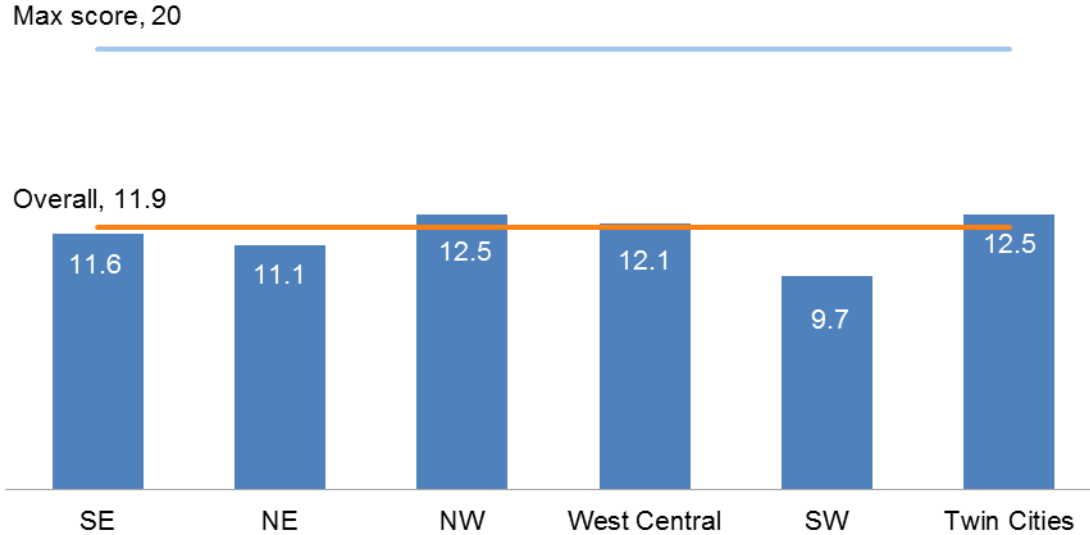
Familiarity scores are similar across organizational types—all organizations can improve in their level of familiarity and awareness. Scores are generally higher in the Twin Cities, the northwest, and the west central regions of the state, though none are much higher than the overall average.

Figure 6. Familiarity rating scores are similar across organization types



¹¹⁸ Additional information about the specific questions and the index is located in Appendix B.

Figure 7. Familiarity rating scores differ by regions



Information resources

Another potential area for development regarding awareness is revealed by Figure 4 (page 64), which shows that information resources are not universally available to first responders within 30–60 minutes. About three-quarters said information about train and pipeline contents was available during that time period, and three in five said expert advice on appropriate emergency response actions was available. This suggests that **connections between local first responders and private sector and state advisors are not uniform across organizations in Minnesota.**

Planning, training, and exercises

Planning, training, and preparedness exercises are common preparedness activities in the emergency management framework. Combining responses to survey questions regarding whether an organization includes oil incident response in their plans, whether staff has training related to oil incidents, and whether an organization has been involved in an exercise related to oil preparedness creates a measure of preparedness activities, which can identify areas of potential capacity development¹¹⁹. This index ranges from zero (nothing done) to three (having oil incident response as part of their plan, having at least some trained staff, and having engaged in at least one preparedness exercise since July 1, 2013).

Overall, **19 percent of first responders surveyed report doing none of these three things.** About a third report having done one of them, and another third (31%) report having done two. **Eighteen percent report having done all three: plans, training, and exercise.**

Figure 8 and Figure 9 below show the planning, training, and exercise index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents (1.5). The light blue line shows the maximum score for this index (3).

¹¹⁹ Additional information about the specific questions and the index is located in Appendix B

Though all organization types can improve in this area, sheriff departments have an above average score. The Twin Cities and northwest regions of the state have higher scores than other areas.

Figure 8. Sheriffs have a higher planning, training, and exercise index score than other organization types

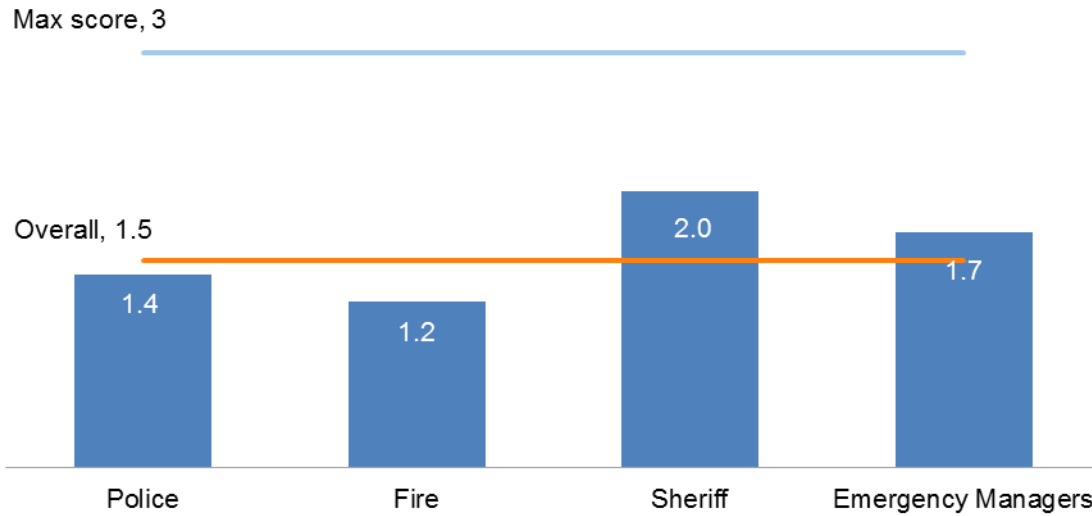
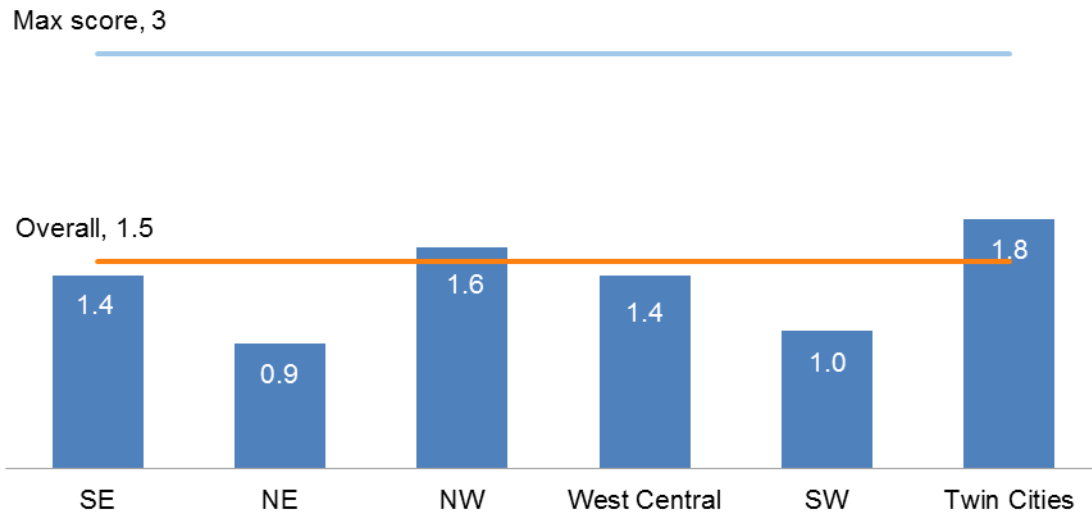


Figure 9. The Twin Cities metropolitan area has the highest planning, training, and exercise index score



Assessments of available resources

The survey asked respondents to identify whether certain categories of resources were available to them *locally or through a mutual aid agreement* to respond to an oil transportation incident: general firefighting equipment, specialized firefighting equipment, spill containment equipment, and hazardous materials monitoring equipment. By counting the number of respondents that reported

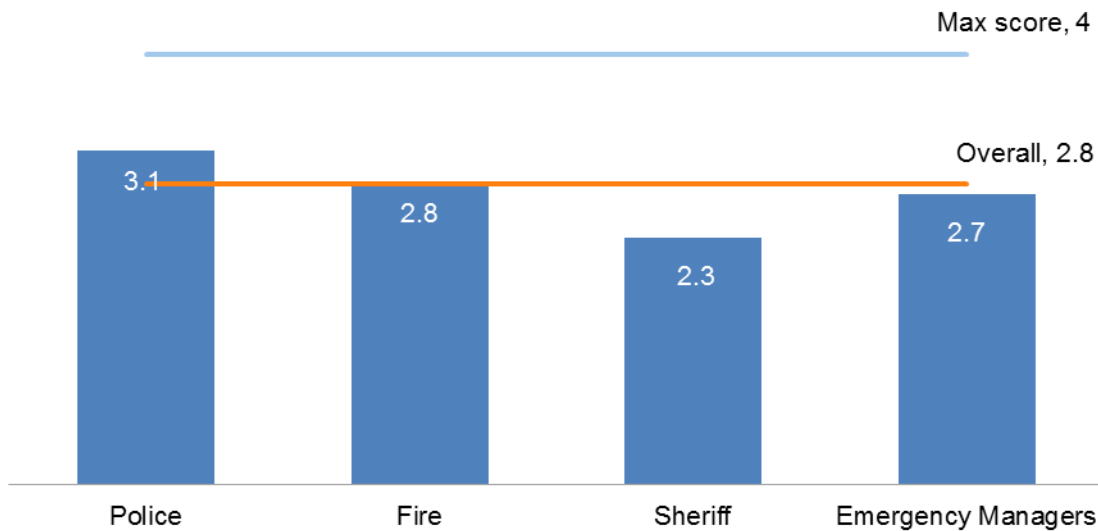
having any of these types of resources, analysts created an index ranging from zero (access to none of the resources) to four (access to all).¹²⁰

Five percent of first responders report having access to none of these types of equipment locally or through a mutual aid agreement; 15 percent, to one; 20 percent, to two; and 17 percent to three. About two in five (43%) report having access to all four. It is important to note that reported access to resources in a given area does not necessarily mean that an organization believes that there are sufficient resources to respond to a significant oil transportation incident.

The charts below (Figure 10 and Figure 11) show the resource availability index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents (2.8). The light blue line shows the maximum score for this index (4).

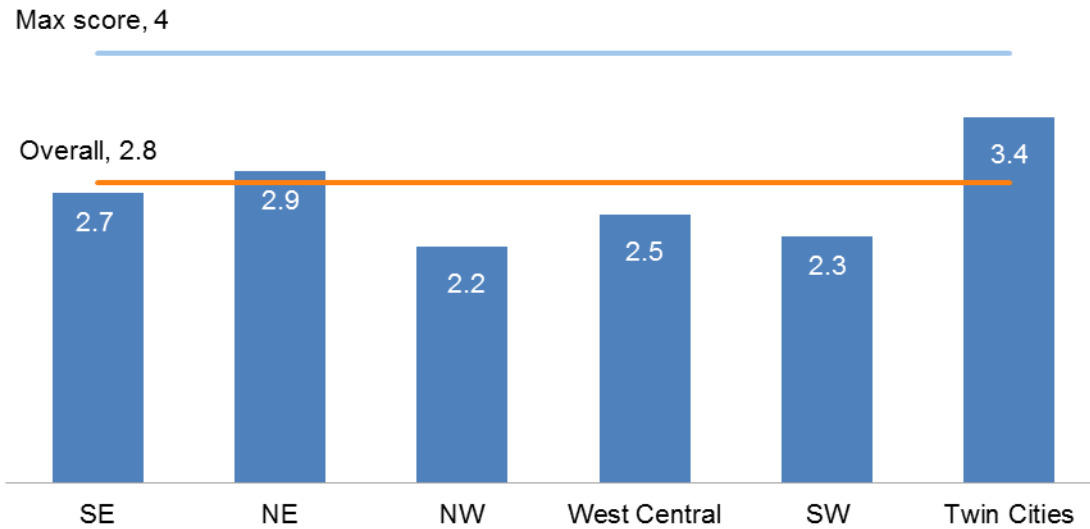
Different organizations assessed the availability of local resources similarly. Organizations in the Twin Cities reported having greater local or mutual aid access to resources.

Figure 10. Assessments of available local or mutual aid resources are relatively similar across organization types



¹²⁰ Additional information about the specific questions and the index is located in Appendix B

Figure 11. Responders in the Twin Cities metropolitan area report greater local or mutual aid access to identified resources



Additional Resources Needed

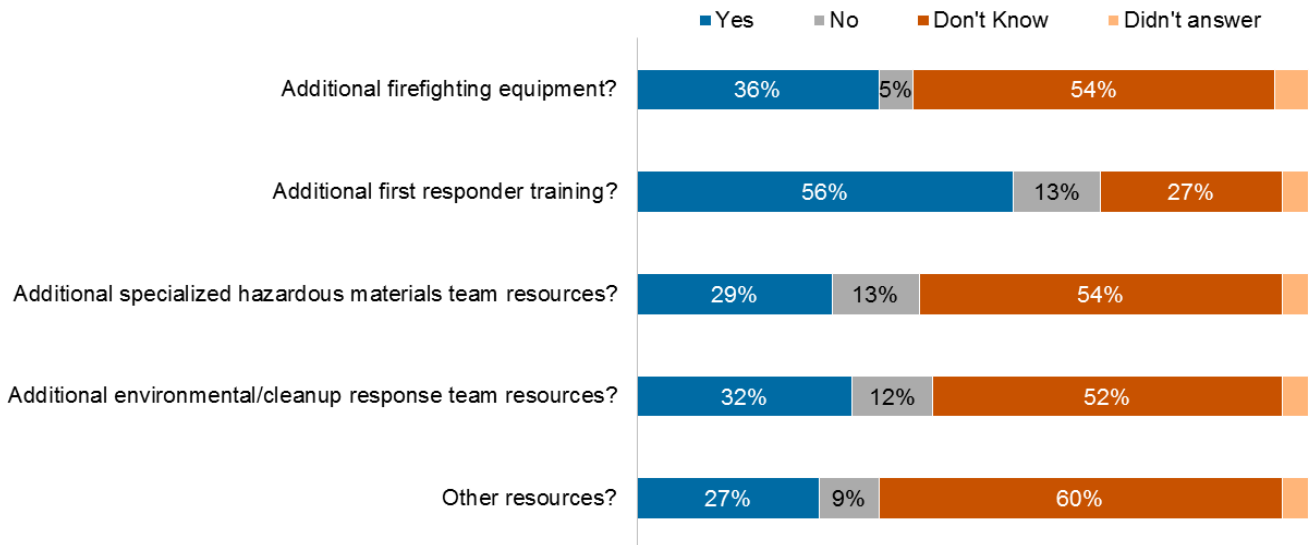
The survey asked first responders if additional types of resources were needed for their government to respond to an oil transportation incident.

The majority (56%) of survey respondents indicated that additional training is needed to respond to an oil transportation incident.

Regarding equipment or other resources, **the majority of first responders said they did not know what additional resources are necessary to respond to an oil transportation incident.**¹²¹

¹²¹ There were some differences in regional or organizational perspectives; these differences are described in Appendix B. For example, fire departments were more likely to indicate that they need additional firefighting equipment, and the Twin Cities area was less likely to report the need for environmental clean-up or response team resources. These differences do not counter the overall trend in the data that first responders surveyed are unaware of what additional resources may be needed.

Figure 12. Most first responders indicated they do not know what additional resources are needed to respond to an oil transportation incident



Additional resource needs identified by first responders

Although the majority of surveyed responders indicated that they do not know what additional resources are needed beyond training, about one-quarter to one-third of survey respondents indicated that additional resources are needed in different categories. The survey prompted these respondents to provide additional information regarding what resources are needed.

Though the survey questions asked for specific responses related to different categories, several patterns emerged from answers within all categories.

Very few respondents were specific in identifying their departments’ needs. Some indicated that they know that some kind of additional resources are needed, but they were not sure exactly what those resources are. Some emphasized that funding would be necessary for any additional preparedness efforts (for staff, equipment, or training).

Firefighting foam (and corresponding equipment and water supplies) was a commonly expressed need among those who responded. Respondents also identified monitoring and spill containment equipment as potential needs. Some respondents emphasized that they did not have local resources for hazardous materials response and wished that CAT or HAZMAT teams were closer to their areas. Some responders indicated that planning and training regarding evacuation would be necessary.

Another theme that emerged was a **need for additional information from rail and pipeline companies, both in terms of the materials they are transporting and the equipment and resources they can bring to respond to an incident.**

Examples of comments:¹²²

- *Where to start ... Where is there enough foam and special fire equipment, and how are we going to cover the cost to have it?*
- *Without knowing what is being transported and the properties of the products it would be hard to say what we would need.*
- *Our fire departments, especially rural volunteer departments, would not have the appropriate foam or other material needed to battle a large fire.*
- *[We need] lots and lots of foam.*
- *Additional resources for firefighting; specialized fire equipment [are needed] ... We could do a regional purchase and have it available to several counties.*
- *I don't know how to answer this [question about additional environmental cleanup resources]. We would rely on hiring contractors and state assistance as I don't think we could fund all the equipment we would need. I think a single tank car that derailed would overwhelm us.*
- *I think the issue here is not the material or chemical, it's the quantity. Responders are ill equipped for tools and training to respond to an incident with the magnitude such as a dozen breached rail cars with crude oil. I think the state is doing the right thing by bringing forward the training to understand the potential, but we need to make sure all responders know what the resources are to respond to this type of incident, where they are, and how to get them, fast.*

Improving Training and Exercises

As discussed above, perceptions of preparedness are very connected to participation in training and exercises. Additionally, **a large majority (88%) of those who had engaged in preparedness exercises related to oil transportation reported that the exercise had enhanced the jurisdiction's preparedness efforts.**

Given these connections, a focus on improving training and exercises can help build capacity to respond to an oil transportation incident. Researchers reviewed survey responses to identify areas of improvement needed for training and exercises.

As noted above, about half of local responders surveyed said staff have received training to respond to an oil transportation incident, and most of those responders indicated that the training was sufficient. Survey respondents who reported that the training they attended was *not sufficient* were prompted to provide information about what would be needed to make the training more useful to their area's preparedness efforts. Among those who responded (29 survey respondents answered this question), the most frequent response was advanced training, including training specific to hazards that might be encountered in their jurisdictions. A few mentioned that they needed to do more internal planning, or use past incidents as a planning tool.

Examples of comments:¹²³

- *We need to get all responders trained.*

¹²² Comments edited for typographical errors.

¹²³ Comments edited for typographical errors.

- *We need to start from the beginning. We have HazMat awareness and that is it...*
- *Continued exercises on the response to these events to include: evacuations, public notifications, containment, access to remote areas of the tracks, fire suppression, etc.*
- *Would like to know what we are getting into ... What kind of vehicle or equipment is needed?*
- *We first need training, after that perhaps we would better know what kind of equipment is necessary for such an event. I am personally unsure if any department would consider themselves fully prepared ...*
- *[We need a] hands on course in MN*
- *[Training should be] less of a commercial for how prepared the railroads are and more practical, useful incident management information.*

As discussed above, a majority of survey respondents indicated that additional training is needed to respond to an oil transportation incident. Survey respondents provided information about the kinds of training that would be needed. Specifically, they indicated that they need (list is in order of proportion of responses):

- Basic first responder training/incident management
- Rail or oil incident response/advanced training/container content training
- Hands-on training
- Advanced training (general)
- Law enforcement personnel training
- Evacuation training
- Training for all personnel in department
- Training on resource availability

Coordination and collaboration

As discussed above, most survey respondents indicated that they have mutual aid agreements that would apply to an oil transportation incident, and a large majority said that their mutual aid agreements were sufficient. When survey respondents answered that their mutual aid agreements were not sufficient, they were prompted to select from a list of possible changes or to supply their own ideas for changes to mutual aid agreements. Among those who responded (28 survey respondents answered this question), **public/private agreements for sharing resources was most frequently selected as an area for improvement.** Some respondents indicated that more agreements with nongovernmental entities or broader scope of agreements would be beneficial; relatively few indicated that more agreements with other governments would be useful.

Capacity Development—Perspectives of Elected Officials

Focused interviews with selected state and local elected officials revealed useful perspectives on areas for capacity development. Appendix D contains a complete report.

Generally, elected official interviewees cited the need for more education and awareness, training, and equipment.

When asked to comment on what is needed to increase preparedness, more than half of the elected officials indicated that responders would need additional training and equipment.

- Several officials said they were not conversant enough to provide specific recommendations.
- Many were uncertain what equipment is available to them or what they would need in the event of an oil transportation incident.
- A few elected officials with public safety backgrounds could be specific about additional resources needed: more containment products, foam, chemicals, and breathing apparatus.

Some officials identified legislative or regulatory changes needed to support responder capacity development, including the following (note that many of these examples were offered by only one or two interviewees):

- Establish additional emergency response teams, particularly in northeastern Minnesota; establish additional caches of response equipment and supplies.
- Ensure that rail and pipeline companies are held responsible for incidents and incident preparedness, such as a having companies pay for necessary training and equipment.
- Increase funding from the state to support local police and fire departments; the local tax base cannot support the additional resources needed.
- Establish requirements for specific training for first responders, particularly firefighters.

Additional information on elected officials' perspectives, including their recommendation for *prevention* activities, is in Appendix D.

Capacity Development—Perspectives of Subject Matter Experts

MAD asked state agencies, first responder and local government associations, and pipeline and railway representatives to comment on the current responder capacity and identify what is necessary for Minnesota responders to be prepared for an oil transportation incident.

Most of the interviewees provided thoughts and advice in these areas, but it is important to note that some local government associations did not believe they are qualified to answer for responders. Also, railway and pipeline representatives spoke to their experience as responders rather than focusing on the capacity development of local responders. Railway and pipeline companies approach an oil incident as it is solely their responsibility and therefore focus mainly on their level of preparedness. However, some do rely on local responders to assess an oil transportation incident, secure the area, and evacuate if necessary.

Training

Although there is a range of opinions of what is necessary, the message from those providing input is very clear. **Many interviewees stated that additional oil transportation training is essential for responder preparedness.**

Most of the interviewees described the current training as providing a general overview and awareness of transporting crude oil. An example comment:

- *Right now we have to start with awareness so we don't get them [firefighters] killed. Then we can show a menu of other classes—operations and technician level. There aren't as many departments that would qualify for that level of training, but it's important to know that there is more to it than awareness.*

Although awareness is helpful and necessary, it does not ready a responder to respond effectively to an oil incident.

Considering all of the responses together, an approach to a training curriculum emerges that would incorporate three fundamental components:

- First, identify the skills and knowledge necessary for all responders to respond to an oil incident, railway and pipeline, including when to evacuate and when the best approach is to let the fuel burn out. Then, assess the need for a subset of responders to be trained in more specific oil transportation response operations and techniques and provide guidance to local responders to assist in identifying who needs to be trained. The assessment of specific operations and techniques training would consider the current preparedness framework and the roles of the Chemical Assessment and Emergency Response Teams.
- Second, fashion the training to local emergency operation plans. The training would include table top exercises, drills, and after action reviews to assess the response. Some of the interviewees believe it is necessary to look to communities with higher risk potential, as identified through their emergency operations plan, (i.e. located along the railway and/or pipeline with population and receptor risks) as a first priority to receive training.
- Third, railway and pipeline companies need to be very involved in developing and presenting the new training being offered.

Considerations and concerns regarding training

Many of those interviewed identified issues to consider when implementing a first responder training approach. Many of the local government associations, responder associations and state agencies pointed to fire department resources. Many described fire department staffing and retention as limiting participation in training events. **It is difficult to send staff to attend training when departments are already short staffed (or very tightly staffed) and the priority is to have enough personnel to respond to an incident.**

Also, some interviewees said that many local responders are both fire and medical responders. In the case of an oil incident, the responder would provide a medical response first if necessary.

Although funding is available for some training, the cost of travel and accommodations is not, making it difficult for some fire departments to send personnel. Drills and exercises are resource intensive in terms of staffing and funding. In general, it is difficult for some communities to maintain and sustain responder training.

Example comments:

- *Staff turnover in fire departments and other responder organizations means that repeat training is necessary.*
- *Resources are limited for training—it can be challenging for departments to send staff to training, and state agencies have limited resources to conduct training and outreach.*

Equipment

Many of the interviewees described firefighting foam and application equipment as the correct approach to attack a small oil transportation incident-related fire. In addition, they said that most fire departments do not carry enough foam or have the ability to access the amount of water necessary to activate the amount of foam necessary for a significant oil incident.

The majority of state, local government and responders associations **cautioned against the investment in additional equipment until more is known about current public and private equipment resources. More specifically, they believe it is necessary to identify the resources that may be shared and where to locate them to insure a timely response.** Many interviewees mentioned the equipment caches managed by the railway and pipeline companies as possible resources. The implication here is that once it is understood what is available, this information would be provided to emergency managers to fold into their emergency operations plans and to the State Duty Officer to quickly identify equipment locations during an incident response. Once provided with the necessary information, emergency managers would be in the position to determine if additional equipment is necessary.

Example comments regarding equipment:

- *Minneapolis, St Paul, Rochester, Fargo fire departments have foam. Cities with commercial airports would have foam. Most of the state doesn't have that. You need foam to fight these fires. And you need a water source to activate the foam. The foam that's available wouldn't be enough to address a substantial fire at a derailment. But, the first response is not to fight the fire. It's problematic to spend time and money to supply enough foam when it's not the recommended response.*
- *The majority of departments have small capabilities, and most firefighters know how to utilize a foam application—but at a small scale, like a truck fire. They are not set up for big rail train. Most would have 5–10 pails of foam—and these are usually 5 gallon pails. Some departments may have supplies warehoused—rail companies do, too. The question would be is it accessible when there's an incident.*
- *In a rail incident, a trained responder with a pipe wrench can do more than a \$1 million hazmat rig with no one with training. The answer is not equipment—if it was, our [company's] inventories would look very different ... We don't think that having these foam trailers everywhere would change any outcomes.*

Considerations and concerns regarding equipment

A few interviewees expressed concerns about the availability of private sector resources. These concerns included whether companies can truly share resources when needed, and whether local governments are fully aware of private sector resources.

- *CP and BNSF have contract hazmat teams all over. I think there are at least 16 teams in MN. They are available to respond, and they have resources that can be shared. But if no one is aware, that's no good. They also have equipment caches on two sides of state; they could be 2–6 hours away from an incident. Whether the caches and contractors are sufficient will depend on the incident.*

A few interviewees described companies' reliance on contractors to provide response. One noted that there is a limited market for these types of services, so it would not be reasonable to expect more companies to be established and maintained.

Coordination and collaboration

A few interviewees connected their opinions about resources with their view that more collaboration and coordination is the key to preparedness, and that adding resources without coordination would not be helpful.

Some state interviewees indicated that there have been barriers to communication and cooperation, or they offered ideas for better communication and cooperation. Examples of problems with communication dealt primarily with past tensions between and among state agencies, rail and pipeline companies, or local governments.

A few state interviewees spoke directly about **collaboration and coordination** being **one of the most important aspects to increasing preparedness**.

Examples of comments:

- *The key is more local- and company-level collaboration—preparedness efforts should fit the area.*
- *The state doesn't do a good job of conveying what resources we have and can bring to bear ... All the agencies should come together on this, and not just for oil ... We should have a unified vision and mission and goal [for hazardous materials]. We have to all get on the same page.*
- *Look at collaborations more for responding to incidents. As part of that collaborative work, identify strategic locations for equipment. Develop plans to get equipment where we need it quickly.*
- *The rail and pipeline companies should form a cooperative or other organization to standardize training (with HSEM and the Fire Marshal) and to share equipment.*

Fiscal changes

Interviewees provided opinions about fiscal changes needed to enhance public safety preparedness for an oil transportation incident.

Most interviewees' recommendations were connected to the **need for training across the state**: resources to make it easier for local responders to attend training and exercises, resources to offset the costs of running simulations and drills, resources to expand the limited number of available trainers in state agencies, and **resources to sustain the training program over time** (including providing refresher training and updated training as needed to address changes in tactics or materials).

Another recommendation is to **establish separate funds for training and equipment**—pots of money that could be used to increase capacity.

A few interviewees recommended caution and prudence in expanding funding for oil transportation safety:

- *The way that everything was earmarked makes sense at this point. Give it a little time to see what happens with the curriculum and see if that is that money well spent. Then, look to whether we need additional ERTs or more employees or other resources.*
- *Once we get past the study and initial training, we should look at funding equipment and training beyond awareness. If some location along the track is more risky—derailment areas, for example—maybe we should station equipment there. Then we should look at the next step of training.*
- *It would be a waste of state money to provide things like proximity suits and foam applicants to [all] fire departments. An exception is Minneapolis and St. Paul—the other fire departments are just not going to be able to respond [to a significant incident].*

Changes underway to enhance preparedness

State agencies and local governments are currently making efforts to increase preparedness for oil transportation incidents, particularly regarding oil transportation by rail.

HSEM

HSEM's focus in this area since the passage of the 2014 legislation has been developing and coordinating a training program for oil transportation incident preparedness. HSEM hazardous materials experts developed a curriculum, including tabletop exercises, and they have tested different versions of the program with local first responders. The program incorporates information and participation from rail and pipeline companies and MPCA. As of this writing, HSEM has conducted or scheduled 23 training sessions across the state.¹²⁴ Plans are underway for additional training exercises leading up to an oil incident preparedness drill.

MPCA

Shortly after the 2014 legislation was passed, MPCA asked railroads to provide their current emergency response plans and to respond to a take-home drill with a challenging spill scenario. MPCA has reviewed this information and provided feedback to the railroad companies, and the agency intends to continue working with the railroads to ensure that they have strong plans in place at the June 1, 2015 deadline. MPCA staff is also participating in the training coordinated by HSEM.

Local governments

Information reviewed for this study indicates that some local governments are directing their attention to oil transportation safety. For example, several first responders surveyed indicated that they are working with the state to bring training to their area.

¹²⁴ DPS, HSEM, "Minnesota Rail Safety: Latest Developments," 2014. Accessed December 11, 2014, <https://dps.mn.gov/divisions/hsem/planning-preparedness/Pages/minnesota-rail-safety-regulations.aspx>.

Railroad and Pipeline Safety Account

The 2014 legislation established the Railroad and Pipeline Safety Account and specific provisions for distribution of funds. Annually for three years, railroads and pipeline companies will be assessed a total of \$2,500,000. The legislation directs the funds to be distributed in this way:

- \$104,000 to MPCA for environmental protection activities related to rail transportation.
- \$100,000 for emergency response teams.
- The remainder (\$2,296,000 annually) is allocated to DPS's Board of Firefighter Training and Education and HSEM, with the following priorities for use of funds:
 - firefighter training needs;
 - community risk from discharge incidents or spills;
 - geographic balance; and
 - recommendations of the Fire Service Advisory Committee.¹²⁵

The funds allocated to DPS may be used for:

- (1) training costs, which may include, but are not limited to, training curriculum, trainers, trainee overtime salary, other personnel overtime salary, and tuition;
- (2) costs of gear and equipment related to hazardous materials readiness, response, and management, which may include, but are not limited to, original purchase, maintenance, and replacement;
- (3) supplies related to the uses under clauses (1) and (2); and
- (4) emergency preparedness planning and coordination.¹²⁶

The funds from the Railroad and Pipeline Safety Account are being used as directed by the legislature. The 2014 funding has been used to establish the ERT in Moorhead and was transferred to MPCA to support their railroad preparedness activities. As described above, HSEM is in the process of scheduling and conducting training for first responders across the state, prioritizing areas that could be affected by a transportation incident.

With the addition of a one-time appropriation of \$1,574,000 from the general fund in 2014,¹²⁷ a total of \$9,074,000 will be deposited in the Railroad and Pipeline Safety Account through June 30, 2016. Excluding the funds directed to MPCA and emergency response teams, \$8,462,000 remains for enhanced preparedness efforts.

Options for additional preparedness efforts

MAD examined efforts used in other states regarding rail and pipeline preparedness and in other preparedness contexts in Minnesota to identify possibilities for enhancing Minnesota's preparedness to respond to an oil transportation incident. These include:

¹²⁵ Minnesota Statutes 2014 § 299A.55, subd. 3.

¹²⁶ Minnesota Statutes 2014 § 299A.55, subd. 3(d).

¹²⁷ Laws of Minnesota 2014, chapter 312, article 19, section 13.

- Variations of CAER organizations, which range from true equipment cooperatives (where private and public entity have access to response equipment) to awareness programs.
- Multi-state associations that connect public and private sector entities for response drills and other preparedness activities.
- Joint Power Agreements (JPAs) among counties and cities in HSEM regions—used for coordinating resources under various grant programs.
- Minnesota’s Radiological Emergency Preparedness program, which includes public awareness campaigns, first responder training, response equipment, and preparedness drills in areas of Minnesota that could be immediately affected by a nuclear incident.
- Minnesota’s Emergency Planning and Community Right-to- Know Act (EPCRA) Regional Review Committees, which are focused on reviewing local plans for responding to an emergency involving hazardous materials discharge from a fixed facility.
- Recommendations generated by other states that are considering increasing rail transportation preparedness, including creating comprehensive inventories of firefighting and spill recovery resources, a web portal for preparedness resources, and an equipment network to ensure timely response to an incident.

Additional information on most of these programs is in Appendix F.

Associated costs for enhanced preparedness

To assist in developing recommendations for expenditure of funds, MAD compiled information on relevant HSEM preparedness and response programs. The funding mechanisms for each of these programs vary (general fund, assessments, and fees). The figures below represent *costs* of programs.

Hazardous Materials Response Program

Approximate cost in fiscal year 2015: \$1,076,000

This amount includes costs of administering the program and the contracts for CAT and ERT teams. It includes funds from the new Railroad and Pipeline Safety Account, which is not a permanent fund.

EPCRA and Regional Review Committees

Approximate cost in fiscal year 2015: \$269,000

This amount includes costs of administering the program and reimbursing committee members for their participation.

Radiological Emergency Preparedness (REP)

Approximate cost in fiscal year 2015: \$5,539,000

This amount includes the costs of administering the program, aid to other organizations (including cities, counties, state agencies, and nongovernmental organizations—accounting for about two-thirds of the program costs), equipment and supplies, communications materials, and information technology needs specific to the program.

Conclusions

Capacity development needs

As a whole, first responders surveyed for this study rated their area's preparedness for an oil transportation incident as below moderate. None of the responders rated their area's preparedness as excellent. The analysis of data from the first responder survey provides support for a common-sense emergency management perspective: organizations that are familiar with hazards and aware of resources; that engage in planning, training, and exercise; and that have resources available to respond will consider themselves to be better prepared for an incident.

The majority of survey respondents indicated that additional training is needed to respond to an oil transportation incident; the large majority of those who participated in exercises regarding oil transportation incidents reported that the exercises increase their preparedness. Survey respondents offered ideas for improving training, including providing advanced training, training on specific hazards in their communities, and evacuation-related planning and training.

The relatively low level of awareness and familiarity reported by surveyed first responders indicates that an awareness level of training is necessary.

Training and coordination are identified as higher priorities than equipment by information in this study. Several examples of preparedness efforts explored in this report, such as the CAER group approach, emphasize coordinated efforts among public and private entities. There is currently no state-adopted framework or template for local governments and others to develop cooperative groups.

Many interviewees described challenges with training first responder personnel, including staffing shortages.

Changes underway

The 2014 legislation provided direction and funding to state agencies to enhance preparedness. MPCA has reviewed railroad company response plans and results of desk drills and is communicating with railroad companies. HSEM is coordinating and conducting training across the state for local first responders.

Fiscal implications

It was not feasible to develop estimates for costs needed to increase local first responder capacities in this study. Local first responders are in the best position to assess their own capacity, but they do not have sufficient information and awareness regarding private sector and regional programs.

The roughly \$8,500,000 expected to be allocated over the next two and a half years is a significant amount, and can likely increase preparedness in the state a great deal. However, when compared to a comprehensive preparedness program like HSEM's REP program (which will cost roughly twice that amount during the same period, and which covers a significantly smaller part of the state), the funds will not be sufficient to reach that level of preparedness in all areas of the state that could be potentially affected by an oil transportation incident. That said, given the relative risks and consequences of an oil

transportation incident compared to a nuclear incident, the level of preparedness under the REP program may not be warranted.

Put simply, the funds available in the Railroad and Pipeline Safety Account would—while the account is funded—support a preparedness effort larger than the EPCRA program but smaller than the Radiological Emergency Preparedness program.

Information in this study indicates that Minnesota’s preparedness for an oil transportation incident can be enhanced by taking several immediate steps involving training, then using regional planning to tailor additional training and equipment needs to local communities based on their level of capability and risk.

Evaluating Response Preparedness

Section Overview

Legislative requirement addressed in this section (dark text):

- (1) summarize the preparedness and emergency response framework in the state;
- (2) provide an assessment of costs and needs of fire departments and other emergency first responders for training and equipment to respond to discharge or spill incidents involving transportation of oil;
- (3) develop a comprehensive public and private response capacity inventory that, to the extent feasible, includes statewide identification of major emergency response equipment, equipment staging locations, mutual aid agreements, and capacities across industries involved in transportation and storage of oil;
- (4) provide information and analysis that forms the basis for allocation of funds under Minnesota Statutes, section 299A.55;
- (5) develop benchmarks or assessment criteria for the evaluation under subdivision 2;
- (6) assist in long-range oil transportation incident preparedness planning; and
- (7) make recommendations for any legislative changes.

Additional legislative context for this section:

Subd. 2. Evaluation of response preparedness and funding. By January 15, 2017, the commissioner of public safety shall submit an evaluation of safety preparedness and funding related to incidents involving transportation of oil to the chairs and ranking minority members of the legislative committees with jurisdiction over transportation and public safety policy and finance. At a minimum, the evaluation must:

- (1) provide an update to the report under subdivision 1 that identifies notable changes and provides updated information as appropriate;
- (2) evaluate the effectiveness of training and response preparedness activities under Minnesota Statutes, section 299A.55, using the criteria established under subdivision 1, clause (5);
- (3) identify current sources of funds, funding levels, and any unfunded needs for preparedness activities;
- (4) analyze equity in the distribution of funding sources for preparedness activities, which must include but is not limited to
 - (i) examination of the public-private partnership financing model, and
 - (ii) review of balance across industries involved in storage and distribution of oil;and
- (5) make recommendations for any programmatic or legislative changes.

This section provides information on:

- Evaluation difficulties
- A possible framework for evaluating response activities
- Next steps required for evaluation

Difficulties in Evaluating Preparedness

Subject matter experts and research literature consulted for this study indicate that there are difficulties associated with evaluating preparedness for an oil transportation incident or other emergency; one interviewee described it as “emergency management’s conundrum.” If there is not a serious event, an organization or jurisdiction cannot know with certainty that their preparedness plans and training programs will lead to the intended outcomes. Emergency management experts and regulators often use an evaluation of a preparedness plan against set standards as way to assess preparedness.¹²⁸ Table-top exercises and announced and unannounced drills are other ways to gauge preparedness¹²⁹, but these can be expensive and time-consuming efforts—and they are sometimes not realistic enough to truly assess preparedness.¹³⁰ Further, these types of activities alone would not allow the state to determine if efforts to enhance preparedness described in the 2014 legislation were having an impact.

Results-Based Accountability

The Results-Based Accountability (RBA) approach¹³¹ can be beneficial in evaluating a program because it allows focus on program-level accountability while also attending to population-level accountability. A program should be contributing to a population-level outcome, though it is often more appropriate to focus on program-level outcomes.

¹²⁸ For example, the Emergency Planning and Community Right-to-Know Act (SARA Title III) places great emphasis on review of local plans for emergency preparedness regarding hazardous materials storage facilities. DPS, HSEM, “Regional Review Committees Operating Policies and Procedures,” January 2013. Accessed December 12, 2014, <https://dps.mn.gov/divisions/hsem/epcra/Documents/rrc-orientation-manual-1-2013.pdf>. Another example is in the emphasis on planning placed by the federal government: Federal Emergency Management Agency, “Developing and Maintaining Emergency Operations Plans: Comprehensive Preparedness Guide (CPG) 101” Version 2.0., November 2010. Accessed December 9, 2014, http://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg_101_comprehensive_preparedness_guide_developing_and_maintaining_emergency_operations_plans_2010.pdf. and United States Government Accountability Office, “Disaster Response: Criteria for Developing and Validating Effective Response Plans: Statement of William O. Jenkins.” GAO-10-969T. September 22, 2010. Accessed December 15, 2014, <http://www.gao.gov/products/GAO-10-969T>.

¹²⁹ For example, Minnesota’s Radiological Emergency Preparedness program, described in Appendix F.

¹³⁰ For example, Jackson, Brian “The problem of measuring emergency preparedness: The need for assessing ‘response reliability’ as part of homeland security planning,” Rand Corporation, 2008. Accessed December 15, 2014, http://www.rand.org/pubs/occasional_papers/OP234.html

¹³¹ Results-Based Accountability is advocated by Mark Friedman, among others. More information about Results-Based accountability can be found in: Friedman, Mark. *Trying hard is not good enough: How to produce measurable improvements for customers and communities*. Santa Fe, NM: FPSI Publishing, 2005.

In the RBA framework, the important questions about any service or program’s performance are:

- How much did we do?*
- How well did we do it?*
- Is anyone better off?*

In most government organizations, managers focus primarily on the first question, sometimes look at the second, and only rarely consider the third.

Applying the RBA approach to rail transportation public safety preparedness, MAD has developed initial ideas for program accountability. These ideas should be vetted by public safety experts and first responders before they are applied. Additionally, these measures should be put into the context of an overall evaluation process for hazardous materials preparedness response in Minnesota.

Table 4. Preliminary Performance Measures for Training and Response Preparedness Activities

Question	Performance Measure
How much did we do?	<ul style="list-style-type: none"> • Number of trainings conducted • Number of table-top exercises conducted • Number of drills conducted • Number of new cooperatives or interjurisdictional groups formed using the state’s guidance
How well did we do it?	<ul style="list-style-type: none"> • Geographic and risk-based distribution of training and exercises conducted • Participant evaluations of training sessions and table-top exercises • After action reviews of drills or large-scale exercises • Quality of applications for funding submitted using the state’s guidance
Is anyone better off?	<ul style="list-style-type: none"> • Follow-up exercises with organizations who received training to determine if their preparedness has improved. • Survey of first responders using similar questions as the survey in this study. The indices developed here can serve as a baseline for determining if preparedness has improved.

Necessary next steps for evaluation

Program evaluation and performance measurement require deliberate actions early on and throughout a program. These basic steps will be necessary for the state to evaluate preparedness efforts:

- Record keeping: In order to utilize the measures described above, training evaluation forms must collect adequate information, the training evaluations themselves must be maintained, and accurate records must be kept regarding locations of trainings, number of participants, and similar information.
- An overall framework for evaluating the state’s hazardous materials and oil discharge response programs is necessary. State agencies involved in spill response can establish goals and timelines for activities and develop a corresponding evaluation approach.

Conclusions

Subject matter experts and research literature consulted for this study indicate that there are great difficulties associated with evaluating preparedness for an oil transportation incident or other emergency. Plan review, exercises, and drills are primary ways to check an organization's or area's preparedness, but these activities alone would not allow the state to know if recent changes and enhancements to preparedness were having an impact.

A Results-Based Accountability approach can provide measures to evaluate a program by generating responses to three basic questions: *How much did we do? How well did we do it? Is anyone better off?* MAD developed preliminary measures using this approach, but these should be vetted by experts.

To conduct an evaluation of the state's preparedness activities and to address the requirements in the next report to the legislature required under the 2014 legislation, state agencies must be deliberate in their record keeping and program evaluation approach.

Findings and Recommendations

Summary of Findings

Background

Oil and other hazardous materials incidents are one of many risks in Minnesota—other threats, risks, and hazards are also of serious concern to emergency management officials. The state as a whole ranks hazardous materials incidents as a medium level of risk in the context of its hazards mitigation planning. Assessments by HSEM regions of threats, hazards, and risks most commonly rank hazardous materials incidents, winter storms, and tornados as their highest risks. In recent years, there have been relatively few hazardous materials or oil transportation incidents in Minnesota.

Oil is transported across Minnesota via rail and pipeline routes that cross large parts of the state; almost any area of the state could be directly or indirectly affected by an oil transportation incident.

Oil transportation has become a salient issue in Minnesota and elsewhere for several reasons: increased production and distribution of oil from North Dakota and Alberta; catastrophic incidents involving rail and pipeline transport of oil, particularly recent derailments and fires involving shale crude oil from the Bakken fields; and findings from federal regulators that shale crude oil is highly volatile.¹³²

Community stakeholders, including emergency management officials, elected officials, and the public, have expressed their concerns about rail transportation at community forums in recent months; public safety aspects of oil transportation incidents are among their concerns.

Though oil transportation risks are of great concern to many members of the public, regulators, and elected officials, the elected officials interviewed as part of this study indicated that their constituents as a whole may not view preparedness for a potential oil transportation incident as a significant issue, given other priorities in their communities.

Minnesota's Preparedness and Response Framework

Minnesota takes an all-hazards approach to emergency preparedness, which means that planners consider potential threats, risks, and hazards and plan accordingly; this approach allows for consideration of specific incidents while also increasing preparedness for any type of emergency. Local governments and regions in Minnesota are developing capability targets and identifying resources to address possible gaps in their response capabilities.

HSEM coordinates planning and response efforts through its regions. The regional approach to hazardous materials response (Chemical Assessment and Emergency Response Teams) was developed in the early 1990s with the realization that local governments would not be able to maintain capabilities (particularly trained staff) to respond to a significant incident.

¹³² North Dakota is expected to implement new standards aimed at reducing the volatility of Bakken crude oil in 2015.

Under state and federal law, Minnesota has a comprehensive framework that would apply to an oil transportation incident:

- Railroad and pipeline companies are ultimately responsible for responding to an emergency involving the substances they transport. They must have plans in place to prevent and respond to discharges, and they must pay any costs associated with responding to a discharge.
- State agencies, particularly DPS and MPCA, have responsibilities associated with evaluating preparedness, coordinating agency response, and providing advice and resources to local governments during significant emergencies.
- Local governments are responsible for ensuring public safety in their communities; in all but the most catastrophic incidents, local officials are the incident commanders on scene. Local governments develop plans to respond to emergencies that may affect their communities, and they are empowered to develop mutual aid agreements and interjurisdictional organizations.
- Minnesota's statutory framework places an emphasis on coordination and collaboration across governments and sectors.

New statutory provisions established in 2014 outline specific additional responsibilities for rail companies that transport crude oil, including established response times and requirements to provide training to local responders. These provisions do not apply to pipelines.

Minnesota's Capacity to Respond to an Oil Transportation Incident

Capacity to respond to protect public safety in an oil transportation incident involves a combination of components, including equipment, trained personnel, emergency plans, mutual aid agreements, and exercises to test preparedness.

Private Sector, State, and Regional Resources

Rail and pipeline companies maintain that they are ready and able to respond to an oil transportation incident, noting that they have their own firefighting and spill response resources in Minnesota and other states and that they have contractual relationships with other responders. MAD obtained and reviewed information from companies to identify major private sector response capacities. Inventory development is challenging because of inconsistent definitions, standards, and quality of information regarding response resources. Though companies identified specialty firefighting resources in their equipment and contractor lists, much of the resources described by companies are focused on environmental response to an oil incident.

HSEM coordinates hazardous materials regional response teams that can provide assistance in an oil transportation emergency. The state has ten Chemical Assessment Teams in Minnesota. These teams have trained personnel and specialized equipment to assist local incident commanders in recognizing and identifying a hazard so local responders can respond appropriately. The state has two Emergency Response Teams that can take additional mitigation action to protect communities from the effects of an oil or other spill.

State agencies, including DPS, MPCA, and MnDOT provide expert advice to local governments if there is a hazardous material or oil transportation incident. If environmental clean-up is needed because of a spill, MPCA would ensure that the responsible party takes necessary action.

A map of private sector resources and regional response teams (page 59) indicates that resources are spread across Minnesota and in bordering states; resources are generally clustered in population centers.

Local Resources

The local government mutual aid infrastructure in Minnesota is well-developed, and most counties and cities have emergency plans that would apply to an oil transportation incident. First responders surveyed for this study, however, are relatively unfamiliar with private sector resources and regional response team resources.

Experts consulted for this study indicated that local governments generally do not have the equipment or personnel to respond to a significant oil transportation incident, such as a large spill or fire. Some emphasized, however, that local governments are not the primary responsible party for an oil transportation incident—the rail or pipeline company is responsible.

First responders reported access to some types of firefighting and spill response equipment locally or through mutual aid agreements. Information resources—such as information on train and pipeline contents and expert advice on appropriate response actions—were available to most first responders surveyed, but not to all.

Training for staff and preparedness exercises on oil incident response are not universal among local governments. About half of the first responders surveyed reported that their departments have staff members who have received training in how to respond to an oil transportation incident, and only about one-third indicated that they had participated in a preparedness exercise since July 2013.

Developing Minnesota’s Capacity to Respond to an Oil Transportation Incident

MAD analyzed information from the survey of local first responders, interviews with experts, and other research to identify areas for development.

Perceptions of preparedness

As a whole, first responders surveyed for this study rated their area’s preparedness for an oil transportation incident as below moderate (2.6 on a 1 to 5 scale). None of the responders rated their area’s preparedness as excellent.

Analysis of data from the first responder survey provides support for a common-sense emergency management perspective: organizations that are familiar with hazards and aware of resources; that engage in planning, training, and exercise; and that have resources available to respond will consider themselves to be better prepared for an incident. Further, a combination of planning, training, and preparedness exercises is a better predictor of high perceptions of preparedness than availability of resources.

Training

The majority of survey respondents indicated that additional training is needed to respond to an oil transportation incident; the large majority of those who participated in exercises regarding oil transportation incidents reported that the exercises increase their preparedness. Survey respondents offered ideas for improving training, including providing advanced training, training on specific hazards in their communities, and evacuation-related planning and training.

The relatively low level of awareness and familiarity reported by surveyed first responders indicates that an awareness level of training is necessary. Many of the experts MAD interviewed indicated that additional training is essential for responder preparedness. Awareness-level training is the first step, but additional training will be necessary. Interviewees described several important components of training: situation assessment (including when to evacuate and when to let the fuel burn itself out), understanding of resources available from the private sector and regional teams, and training and exercises that are connected to the local government's emergency operations plan.

Many interviewees described challenges with training first responder personnel. Departments are often short-staffed, which makes it difficult to release staff for training. Some interviewees described the potential difficulties associated with providing advanced training in hazardous materials response to large numbers of staff, particularly in fire departments that rely heavily on volunteer firefighters. Some rail and pipeline companies indicated that they have had inconsistent or poor attendance at training sessions they have offered to local responders in recent years.

Interviewees indicated that training for all first responders (not solely firefighters) is important. Additionally, some interviewees emphasized that members of the public and elected officials should develop more awareness of oil and hazardous materials risks and of emergency management generally.

Equipment

The majority of first responders surveyed said they did not know what additional equipment or resources are necessary to respond to an oil transportation incident. The relatively few that did provide information regarding additional resources generally said they needed firefighting foam and related equipment.

Experts from a variety of perspectives agree that in some circumstances, the appropriate response to a significant oil fire is to let the fire burn out or down considerably before attacking the fire. The correct public safety response in that situation is to clear the area, take defensive and mitigation actions as possible to prevent property and environmental damage, and consider whether evacuation is warranted. For this reason, interviewees often warned against focusing on procuring equipment as a means of increasing preparedness. Additionally, some experts discussed the lessons communities have learned through other large-scale efforts at increasing preparedness through purchasing equipment—the equipment may not be used frequently, and local governments must maintain the equipment and continuously train staff on its use.

Some surveyed first responders offered the suggestion that regional or multi-county agreements regarding equipment (and personnel, in some cases) would help increase preparedness, and the

majority of state, local government, and responder associations advised that identifying and sharing resources is the best approach. Many interviewees mentioned the equipment caches managed by the railway and pipeline companies as possible resources, though a few interviewees expressed concerns about the availability of private sector resources. These concerns included whether companies can truly share resources when needed and whether local governments are fully aware of private sector resources.

Coordination and Collaboration

Coordination and collaboration are significant areas for capacity development. Survey questions regarding familiarity and mutual aid agreements revealed a need for improved connections between first responders, private companies, and state agencies. A few interviewees indicated that more collaboration and coordination is the key to preparedness; adding resources without coordination would not be helpful.

Some state interviewees indicated that there have been barriers to communication and cooperation, or they offered ideas for better communication and cooperation. Examples of problems with communication dealt primarily with past tensions between and among state agencies, rail and pipeline companies, or local governments.

The state's emergency preparedness framework encourages collaboration, but there are currently no state-adopted templates or other resources for forming groups that would prepare for and respond to an oil transportation incident. A few areas in Minnesota have CAER groups, but these vary widely.

Changes underway to enhance preparedness

The 2014 legislation provided direction and funding to state agencies to enhance preparedness. MPCA has reviewed railroad company response plans and results of desk drills and is communicating with railroad companies. HSEM is coordinating and conducting training across the state for local first responders.

Funds for enhancing preparedness

The established Railroad and Pipeline Safety Account will allow expansion of preparedness efforts. A new Emergency Response Team has been formed in Moorhead, and MPCA and HSEM are engaged in preparedness activities. Deducting statutorily established expenditures, the fund is expected to have a total of approximately \$8,500,000 through June 30, 2016.

Most interviewees recommended increasing training is a priority for resources, including making it easier for local responders to attend training and participate in exercises, offsetting the costs of running simulations and drills, expanding the limited number of available trainers in state agencies, and ensuring that the training program can be sustained over time.

A few interviewees recommended caution and prudence in expanding funding, urging that the changes underway currently (particularly regarding training) be given time to work.

It was not feasible to develop specific assessments of costs for training and equipment for local first responders to be prepared for an oil transportation incident. Local first responders and emergency managers are in the best position to assess their jurisdiction's capacity, but they do not yet have

sufficient information to identify what additional resources are available and needed to respond to an oil transportation incident.

Counties and regions in the state are currently engaged in capability assessment for their emergency management programs. When planners and first responders are more fully aware of the risks of oil transportation incidents and resources available, the capability assessment information will provide a basis for a comprehensive assessment of costs and needs.

In the interim, a means of using the funds from the Railroad and Pipeline Safety Account is necessary. A regional approach to funding requests would encourage cross-jurisdiction and cross-sector collaboration, and an emphasis on training would address many of the issues raised by participants in this study.

Other examples of preparedness efforts can provide an idea of the amount of funding required for preparedness activities:

- HSEM's Emergency Planning and Community Right-to-Know Act (EPCRA) and Regional Review Committees—which are focused on reviewing local plans for responding to an emergency involving hazardous materials discharge from a fixed facility—costs approximately \$269,000 annually.
- HSEM's Radiological Emergency Preparedness program—which includes public awareness campaigns, first responder training, response equipment, and preparedness drills in areas of Minnesota that could be immediately affected by a nuclear incident—costs approximately \$5,539,000 annually.

Put simply, the funds available in the Railroad and Pipeline Safety Account would—while the account is funded—support a preparedness effort larger than the EPCRA program but smaller than the Radiological Emergency Preparedness program.

Evaluating Response Preparedness

Subject matter experts and research literature consulted for this study indicate that there are great difficulties associated with evaluating preparedness for an oil transportation incident or other emergency. Plan review, exercises, and drills are primary ways to check an organization's or area's preparedness, but these activities alone would not allow the state to know if recent changes and enhancements to preparedness were having an impact.

A Results-Based Accountability approach can provide measures to evaluate a program by generating responses to three basic questions: *How much did we do? How well did we do it? Is anyone better off?* Using this approach, MAD developed preliminary performance measures for evaluating preparedness, but these should be vetted by subject matter experts and other stakeholders before they are adopted.

Other issues

Several concerns were identified by participants in this study that are beyond the scope of this report but may warrant additional attention or research, such as transportation infrastructure and health system preparedness. Many participants discussed the importance of preventing or mitigating an oil

transportation incident by improving tank cars and tracks, routing pipelines and rail routes away from population centers and environmentally sensitive areas, or allowing rail companies to have their own law enforcement personnel in Minnesota. Participants familiar with the health system emphasized the need for additional planning for incidents involving casualties and described potential problems associated with the limited number of dedicated burn beds in Minnesota.

Recommendations

DPS has considered the developmental needs identified in this report, and proposes the following recommendations and actions to develop Minnesota's preparedness for an oil transportation incident. DPS intends to **leverage existing organizational structures, programs, and resources to accomplish the goals of the 2014 legislation while also building the state's all-hazard preparedness.**

Recommendation/Intended Action 1: Increase awareness about oil transportation incidents, then develop additional capacity

DPS intends to direct HSEM to engage in a comprehensive approach to expanding awareness about oil transportation incidents, to include:

- Conducting the awareness-level training already underway for fire departments and other responders.
- Developing online resources for the public and first responders, such as awareness materials and training videos.
- Developing guidance for first responders and local governments on responding to an oil incident, including assessment and evacuation protocols.

This **initial focus on building awareness more consistently across the state should be augmented by plans for large-scale drills and hands-on training** for those jurisdictions that are prepared for those activities. Ultimately, DPS recommends expanding the state's training program to support more hands on training and exercises related to emergency preparedness in general.

Recommendation/Intended Action 2: Connect funding for training and equipment to regional coordination

DPS recommends that resources from the Railroad and Pipeline Safety Account be used first to support the training program underway at the state level. Local emergency managers are in the best position to assess their area's capabilities and needs, but many need additional information about risks and available resources related to oil transportation incidents. Additionally, DPS agrees with the findings in this study related to the need for increased coordination and collaboration.

DPS therefore intends to direct HSEM to **develop a process for organizations to apply for training or equipment funding available in the Railroad and Pipeline Safety Account. Requirements for funding should include the formation or expansion of a multi-county or regional collaborative group to identify and share resources.** Wherever possible, existing organizations, joint powers authorities, or public/private partnerships should be utilized. Additionally, funding requests should include descriptions of intended evaluation methods.

To support the formation of these collaborative groups, **agencies participating in the State Agency Responders Committee (particularly DPS and MPCA) should develop guidelines, model charters, and other templates.**¹³³ These state agencies should also develop a recommended evaluation format for these groups to use.

Because the information from these groups will be valuable in the state's planning and preparedness efforts, DPS intends to investigate the possibility of reimbursing members of these groups under state statutes regarding advisory boards.

DPS intends to direct HSEM to administer funds in a similar way as HSEM grant programs, with established regional advisory committees as the funnel for applications.

Based on the information in this study, DPS recommends that funding priorities be set in this order: training (including reimbursement for associated staffing costs); planning and coordination; and equipment that will most likely be used by first responders during an oil transportation incident, such as air monitoring equipment. Applications for funding for large-scale response equipment should include a rigorous assessment of local and regional resources and risks.

As noted in the Background Section of this report, recent developments in North Dakota regulations may result in a less volatile product being shipped in Minnesota, and private companies and regulators at the state and national level are engaged in additional prevention efforts. **The regional and community-based approach described here will allow first responders to examine the risks in their communities in light of new information.**

Recommendation/Intended Action 3: Delay significant changes to the Railroad and Pipeline Safety Account and related allocations

DPS recommends that the funding allocation and assessment be maintained as-is until the next report required under the 2014 legislation. At that time, there will be more information regarding the state's preparedness efforts and the impact of the changes underway. **Future funding determinations should ensure that preparedness efforts are sustainable—for example, funding for the new emergency response team will lapse at the end of Fiscal Year 2017.**

DPS further intends to direct HSEM to prepare and publicize a plan for use of the funding allocated under Minnesota Statutes 2014 § 299A.55, using information from this report and initial assessment of training efforts underway, as well as input from the Fire Services Advisory Committee and the Technical Advisory Committee.

¹³³ The League of Minnesota Cities Insurance Trust may be a useful resource in addressing concerns about liability. Chemical Assessment Teams and Emergency Response teams should also be consulted for ideas for ensuring that these groups are aware of resources they can provide in an incident.

Recommendation/Intended Action 4: Develop a state-level program evaluation approach to assess hazardous materials preparedness activities

In order to effectively evaluate the state's actions under the 2014 legislation, DPS recommends that the state develop a program evaluation process and framework for hazardous materials incident preparedness. **Agencies participating in the State Agency Responders Committee (particularly DPS and MPCA) should jointly develop a list of priority results for preparedness activities and establish timelines and measures to show progress towards these results.**¹³⁴ DPS recommends that information on these results be incorporated in the annual report to the legislature on hazardous materials and oil discharge readiness.

DPS recommends that these state agencies also agree to collect and share data needed under the evaluation process, and that the agencies jointly request railroad companies provide a report on their coordination efforts required under Minnesota Statutes 2014 § 115E.042.

DPS further recommends that resources from the Railroad and Pipeline Safety Account be used to partially offset any costs of evaluation, with the remaining costs shared equally among the responder agencies.

Recommendation/Intended Action 5: Enhance existing databases (or develop new databases) to provide more comprehensive information about response resources across the state

DPS intends to direct HSEM to identify whether its existing resource database system can be modified to **include additional information regarding resources from state agencies, private sector organizations, and local governments**, including but not limited to resources needed to respond to an oil transportation incident. The existing database is accessible to the Minnesota Duty Officer and to local government first responders.

DPS intends to direct HSEM to gather information from railroad and pipeline companies regarding their resources and their contractors' resources to populate the database. HSEM should develop a set of categories for response equipment and resources to ensure consistency.

As an interim step while the database is being developed, DPS intends to direct HSEM to compile the information regarding private sector resources and provide it to local governments on its secure network to aid local first responders in their planning efforts.

If it is not feasible to utilize existing systems, DPS will work with the Minnesota Geospatial Information Office (MnGEO), other agency partners, and private sector advisors to develop mapping and database capabilities and to determine what funding may be needed to support database development and maintenance.

¹³⁴ The Results-Based Accountability approach could be useful in this effort.

Recommendation/Intended Action 6: Establish Standards for Pipeline Preparedness and Response

For local and state government to be able to determine what resources may be needed to develop capacity to an oil transportation incident, it will be necessary to determine if rail and pipeline companies are adequately prepared to respond. The most concrete ways to evaluate preparedness are to examine an organization's written plan against established criteria and to test the organization's preparedness through exercises or drills. **The new requirements for rail companies will allow the state to examine rail preparedness efforts, but pipeline companies do not have similarly well-defined responsibilities.** Pipelines also transport significant quantities of potentially dangerous material in Minnesota, so additional attention to pipeline preparedness is warranted.

DPS recommends that the state **adopt response standards, including timelines, for pipeline companies that are similar in scope and content to the response standards applicable to railroads.**

DPS has not developed a position regarding the appropriate response times for pipeline companies, but will participate in the legislative process as requested.

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Acronyms

CAER – Community Awareness and Emergency Response

CAT – Chemical Assessment Team

CFLOP – Command, Finance/Administration, Logistics, Operations, Planning

CFR – Code of Federal Regulations

CN – Canadian Northern

CP – Canadian Pacific

CPG – Comprehensive Preparedness Guide

DPS – Minnesota Department of Public Safety

EPCRA – Emergency Planning and Community Right-to-Know Act

ERT – Emergency Response Team

ESF – Emergency Response Functions

FEMA – U.S. Federal Emergency Management Agency

HAZMAT – Hazardous Material

HSEM – Minnesota Department of Public Safety, division of Homeland Security and Emergency Management

IC – Incident Commander

ICP – Integrated Contingency Plan

ICS – Incident Command System

JPAs – Joint Power Agreements

MAD – Management Analysis & Development

MIMS – Minnesota Incident Management System

MNCAER – Minnesota Pipeline Community Awareness and Emergency Response

MnDOT – Minnesota Department of Transportation

MnGEO – Minnesota Geospatial Information Office

MNWARN – Minnesota Water/Wastewater Utilities Agency Response Network

MPCA – Minnesota Pollution Control Agency

NFA – National Fire Academy

NFPA – National Fire Protection Association

NIMS – National Incident Management System

NPREP – National Preparedness for Response Exercise Program

NTSB – National Transportation Safety Board

OSHA – Occupational Safety and Health Administration

OSRO – Oil Spill Recovery Organization

PIA – Post Incident Analysis

PPD-8 – Presidential Policy Directive 8: National Preparedness

RBA – Results-Based Accountability

REP – Radiological Emergency Preparedness

RRCs – Regional Review Committees

SERTC – Security and Emergency Response Training Center

THIRA – Threat and Hazard Identification and Risk Assessment

TRANSCAER – Transportation Community Awareness and Emergency Response

UC – Unified Command

UMR – Upper Mississippi River

UMRBA – Upper Mississippi River Basin Association

UMRSG – Upper Mississippi River Spills Group

UP – Union Pacific

USCG – U.S. Coast Guard

Appendix A. Analysis of in-depth interviews

Methodology

DPS and MAD developed a list of interviewees for this project. MAD interviewed representatives of over 30 organizations including rail and pipeline companies, state agency representatives, local government associations, and first responder professional associations. In developing the interview list, DPS and MAD attempted to capture as much information as possible from experts in rail and pipeline safety preparedness. A list of interviewees' organizations is below on page 143.

MAD conducted interviews in September and October 2014, with selected follow-up through November 2014. Almost all interviews were conducted in person or by phone; a few pipeline companies provided information by email only. MAD used a semi-structured approach to the interviews: interviewers used the same base set of questions for all interviews but allowed the conversation to flow organically, with follow-up questions based on the specific interviewee's expertise and organization. In addition to the base list of questions, MAD asked additional questions for rail and pipeline companies and for first responder associations. MAD designed the interview questionnaire to answer the specific research questions posed by the legislation while still allowing interviewees to identify other relevant areas of concern. Interview questions are listed on page 144.

Overview

Interviewees were generally candid and forthcoming with their responses. Rail and pipeline companies were more reserved than state agencies and associations; many representatives expressed concerns about how their information would be used and asked for assurances that nonpublic information would not be disclosed. Several interviewees (from different types of organizations) asked that particular comments or anecdotes be kept private. In this analysis, MAD has attempted to provide as much information as possible without disclosing private or nonpublic data.

MAD has adopted two conventions in this summary:

- General terms like *many*, *some*, *several*, or *a few* are used instead of reporting frequencies or percentages of responses.
- To provide more concrete qualitative information, paraphrased statements from interviewees are included *in italics*. Though the statements accurately reflect the sentiment and content of interviewee comments, they should not be viewed as direct quotations attributable to individuals. Some of the examples provided below are combinations of statements from more than one interviewee.

This appendix provides summaries of interview results from three categories of interviewees: rail and pipeline companies, state agencies, and associations (first responder and local government). The summaries cover the following areas for each category:

- General perspectives
- Preparedness in Minnesota
- Minnesota’s capacity to respond to an oil transportation incident
- Evaluating preparedness efforts
- Recommendation and advice

Though the interviewees had widely differing perspectives on oil transportation safety, some common responses and themes emerged, which are explored in the body of this report, particularly in the section Capacity Development—Perspectives of Subject Matter Experts, beginning on page 77.

Rail and Pipeline Companies

MAD interviewed officials representing 10 rail and pipeline companies operating in Minnesota. Among those interviewed, one company operates almost exclusively as a refinery, with two intrastate pipelines of less than a combined five miles in length that transport crude oil. A second company operates a single pipeline in Minnesota, which runs between the Twin Cities and Dubuque, Iowa. Approximately 130 miles of that pipeline is located within Minnesota’s borders; however, no crude oil is transported within Minnesota via this pipeline. All other companies interviewed regularly transport crude oil and other products, including other hazardous materials, throughout Minnesota.

A number of companies provided MAD with their emergency response plans for responding to an oil spill or other hazardous materials release incidents. These plans are required by both state and federal law. Some companies declined to provide their plans, citing other concerns; though almost all provided at least some information on their response equipment. All rail and pipeline companies that MAD sought input from participated in the interview process. More detailed information on response plan requirements for rail and pipeline companies is included in the section Minnesota’s Preparedness and Emergency Response Framework, beginning on page 38.

General perspectives

Interviewees said that **their companies are well-prepared to respond to an oil spill incident, including having sufficient personnel, training, and equipment.** At the same time, generally all stressed that they prepare and train for an oil-incident the same as they would for any other hazmat-incident, with no significant emphasis on one material compared to another regarding response capacity or preparation. All also underscored that that **training is an on-going component of their response preparation processes,** and that techniques and methods are reviewed and revised as needed. Most interviewees used examples such as attending “boom school,” participating in tabletop exercises and post-incident reviews, or mentioned fire or emergency response programs in various parts of the country that their personnel had been through or would be undertaking.

Rarely did a company representative differentiate between types of crude oil, or raise the issue of volatility of Bakken or Alberta crude oil compared to other crude, in the context of response preparedness. Those that did comment on the belief that Bakken crude is more volatile or flammable than other types, and thus poses a higher risk, indicated that such concerns were overblown, or at least that it was not necessary to pay special attention to oil transportation incidents compared to similar incidents. A couple of interviewees observed that,

- *Whether a tank car of gas or crude, the incidents roll out the same. You get a feel for how local agencies interact. There have been a lot of people talking about lack of preparedness, but crude isn't that unique. Every day gas is transported. When responders say we have no idea how to respond to a flammable liquid – that's more rhetoric than honesty. The volume could be more than what they've seen, but we need to separate that from some idea they don't understand hazmat response.*
- *People read things in the press about volatility—that didn't help first responders. Bakken is somewhere between diesel fuel and gasoline—it's less flammable than gas. It's important to do risk analysis, crude is not more dangerous than propane. There are lots of things in press that were from journalists who do not know chemistry.*

None of the interviewees commented about the relative safety of transporting oil via one mode compared to the other, or to an alternative. Individuals from both industries did note that the overall need for transportation of crude through Minnesota would only increase over the next several decades.

All company representatives pointed out their compliance with various state and federal requirements regarding preparedness, training and safety. For example, among other safety requirements, pipelines must be visually inspected at least twice per month. Interviewees also pointed out that they spend a **great deal of time and resources on efforts to avoid accidents in the first place**. As one pipeline company representative described:

- *The pipeline industry has a set of federal regulations that drive our activities. Emergency Response is the last in a multi-step process designed to reach our goal of zero incidents. Hiring and training the right staff are the most important. We're proud of our staff and their adherence to our corporate values of Integrity, Safety, and Respect. We put tremendous effort into prevention so that we never have to respond. That attention to proactive prevention is evidenced by the following:*
 - o *Starting with route selection to include the least impactful route*
 - o *The use of inspected high quality steel with fusion bonded epoxy coating*
 - o *The testing of 100% of the welds*
 - o *Hydrotesting the pipe before and after placing it in the ground*

All interviewees described that they maintain close working relationships with local and state-level emergency responders and their affiliate organizations, including conducting drills, tabletop exercises, after-incident reviews, and generally maintaining frequent contact. But many added that **they do not depend solely on those local or state-level responders in the event of an actual incident**, relying

instead on their own personnel and equipment, or on an Oil Spill Recovery Organization (OSRO),¹³⁵ or even on another rail or pipeline company with emergency response equipment or personnel nearby.¹³⁶

As one company representative explained, "... [we] maintain a self-sufficient inventory of equipment and certified response personnel to handle any incident that may occur as a result of our liquid pipeline operations. As a result, [we are] not dependent on mutual aid as part of its emergency response planning. However, [we have] an OSRO (Oil Spill Recovery Organization) of record as required by OPA 90. OSRO regulations are defined by the US Coast Guard and address amounts of equipment and response times."

Interviewees were clear that while they cooperate and coordinate with state and local responders at every opportunity, as explored further later in this section, they preferred that their first lines of response to an incident be either internal or contracted emergency responder personnel, or some combination of the two.¹³⁷

Preparedness and response capacity

Minnesota's response framework

In responding to questions regarding Minnesota's preparedness, company representatives generally referred again to their preference for relying on their own response capabilities and those of the OSRO or other contractors they may employ for such purposes. **They also underscored that the ultimate incident response responsibility, and its aftermath and cleanup, lay with their company.** Thus, the context of most responses did not specifically address the state's response framework.

Most interviewees reiterated their company's close working coordination and cooperation with state and local responders, but, again, that their preference was to maintain an in-house response capacity. A number of interviewees also went further to explain that they were either not in the position to comment on Minnesota's preparedness and response capacity, or that they really did not consider that capacity to be part of their own planning process for emergency response preparedness. A few examples from interviewees:

- *We don't see state lines—our plan for Minnesota is similar to plans elsewhere. There are different environmental considerations of course, but how we respond is very similar. If we say that we're going to*

¹³⁵ An OSRO is a voluntary classification that contractors may attain through the U.S. Coast Guard. According to a 2013 USCG report, "The Coast Guard created the voluntary OSRO classification program so that plan holders could simply list OSROs in their response plans rather than providing extensive detailed lists of response resources. If the OSRO is classified by the Coast Guard, it means their capacity has been determined to equal or exceed the response capability needed by the plan holder for regulatory compliance." U.S. Coast Guard, "Guidelines for the U.S. Coast Guard Oil Spill Removal Organization Classification program." Accessed December 11, 2014,

http://www.uscg.mil/hq/nswfweb/nsf/nsfcc/ops/ResponseSupport/RRAB/osro_files/0313Classification%20Guidelines.pdf.

¹³⁶ That does not relieve the rail or pipeline company of the primary responsibility to ensure that their overall plans meet state and federal requirements, including ultimate responsibility for any responsibilities delegated to an OSRO or other contractor.

¹³⁷ As described in another section of this report, many first responder professionals MAD interviewed acknowledged or pointed out that the rail or pipeline companies were the best equipped to respond to any potential spill or other oil transportation-related incident.

get XYZ from the local or state government and they can't or won't respond, we're in a jam. We'd rather not rely on them—it's our responsibility to respond. Government agents are part of incident command. If they respond, they are part of unified incident command. It's about resources and ability to respond. We audit contractors to make sure equipment is maintained. If it's a local government, we don't have financial controls or ability to monitor.

- *Railroads aren't in the position to evaluate a particular state's level of preparedness. [Our company] doesn't rely on a particular state's or region's response plan—it may be a component of [our] response plan, but it doesn't guide [us].*
- *Our philosophy is we want to be prepared as a railroad. We want our own assets and contractors responding. We can't rely on public response. But it really is a partnership. We want all available assets to come to an incident. We would look to responding agency to call in public assets—and for them to understand what we're bringing.*

Another common theme was a “respond first, assign blame later” mentality. For example, the day prior to a particular interview there had been a train accident in Saskatchewan. In responding to this line of questioning, the interviewee noted that, while the railcars involved in the Saskatchewan accident did not belong to his company, they responded with their locally-located fire trailer.

Separately, another official noted that,

- *We are responsible for planning and responding to any release due to derailment, regardless of cause, whether it's a tank failure or a grade crossing accident. It doesn't matter if it's our fault or not—we respond. If it's not our fault, we will look to recover costs later.*

Particularly within the context of preparedness and response capacity, pipeline company interviewees frequently noted their company's compliance with one or more federal or state requirements for safety or response planning.¹³⁸ Both rail and pipeline companies must also comply with various laws and regulations administered by DoT, EPA, Homeland Security, and others.

Rail and pipeline interviewees had similar answers, within their respective industry, to MAD's questions regarding their company's preparedness and response capacity in Minnesota. Broadly, these themes emerged across the respective industries:

- The ultimate responsibility to respond to, and deal with the aftermath of, an oil transportation incident lies with the company in question.
- While all the companies work in conjunction with local, state and federal emergency responders and others, they rely on their own personnel or private contractors as their preferred go-to responders. In some cases interviewees added that while local and state responders are very good at what they do, they don't necessarily have sufficient training or equipment to respond to a significant incident.

¹³⁸Specifically, under 49 CFR 194, pipeline operators are required to file with the U.S. Department of Transportation a spill response plan, based on its worst-case-discharge scenario. Under this requirement, in summary, each operator's response plan “... must include procedures and a list of resources for responding, to the maximum extent practicable, to a worst case discharge and to a substantial threat of such a discharge.”

- Companies own their own specialized emergency response equipment, or employ contractors that provide such equipment.
- State and local responders frequently participate in industry-sponsored response exercises, and are always invited to on the ground training and tabletop exercises. **More than one interviewee expressed frustration that the state and local responders were not required to participate in such drills or training on any regular basis.**
- Most companies send their personnel to specialized emergency response training programs throughout the country, and some partially or fully pay for local responders to attend as well.
- Emergency preparedness is an-going process that is continuously being assessed, and revised as needed.
- Interviewees generally did not know enough detail about, or did not feel qualified to comment on, the adequacy of Minnesota’s emergency response framework.
- Many cited Minnesota’s One-Call centers as the best or among the best that they work with in the country.
- **Public awareness is an important component of emergency preparedness.**

Health system

MAD asked interviewees to describe coordination efforts connected to medical response to an oil transportation incident. Among rail and pipeline companies, few provided specific examples of how medical response was included in their response plans. Many offered no comment at all on this part of the question.

Interviewees who offered opinions or examples pointed to efforts to include medical services in emergency response planning (such as in specific communities’ plans or drills, or by identifying the closest available hospital), but these efforts are not widespread and have not focused on oil transportation incidents. Generally, the specific inclusion of medical services providers in a company’s response plan appears to be cursory at best. Some comments alluded to the “all-hazards” approach, meaning that designing a plan specifically for a potential oil-spill incident is not a worthwhile endeavor. Others, referring to rural areas, noted that many first responders were both firefighters and also the area’s emergency medical responders.

Example comments:

- *We may also get a request from a local planning group or from a hospital. Sometimes they ask us for information on hazmat in the area. Those discussions are not about crude oil usually—it’s about other commodities like chlorine. I haven’t heard a need from hospitals on crude by rail. By comparison to other hazmat, crude isn’t a big health issue. There are potential inhalation issues on non-burning crude, but not like other risks. If I was putting together an emergency plan for a hospital, I wouldn’t have a big concern or focus on rail. You’d want to think about a possible influx from any type of incident, but not rail or crude in particular.*
- *As for medical service providers, we maintain a list within our spill plans of local hospitals that could assist in an emergency.*
- *With respect to hospitals, we focus mainly on raising awareness of the pipeline in the area rather than specific training because they have specific protocols for dealing with significant events.*

- *We do believe our Emergency Responder Education Program is sufficient in terms of scope and content for any incident that may occur as a result of our liquids pipeline operation. For example, in Minnesota, more than 124 users have registered for our online emergency responder training program, and 50 users have registered for our online 9-1-1 dispatcher training program. Last year, we provided more than \$32,000 to Minnesota emergency response agencies through our Safe Community Program.*
- *Hospitals are included in our public awareness mailings pursuant to CFR 192.440.*
- *As for medical service providers, we maintain a list within our spill plans of local hospitals that could assist in an emergency.*
- *All first responders, including hospital reps., are invited to attend Railroad 101. Hospitals regularly review their own response plans (government agencies as well). They are the ones responsible for those plans, and are the best equipped to judge their plans' adequacy.*
- *In a lot of places, the first responder from a medical perspective is the firefighter, who may be an EMT—so they get the training.*

Perceptions of preparedness

MAD asked interviewees to provide their assessment of Minnesota's preparedness to respond to an oil transportation incident, using a scale of one to five. Most rail and pipeline company interviewees were either reluctant to put a numerical value on preparedness levels, or claimed to have insufficient knowledge of the state's efforts in this area to comment. Only one company provided a numeric score, rating Minnesota's level of preparedness a four.

MAD also asked interviewees to consider how prepared Minnesota is for an oil transportation incident compared to other hazardous materials incidents. Three of the companies interviewed weighed in on this question, with, again, only one offering a numeric score.

Examples of perceptions of preparedness:

- *Railroads aren't in the position to evaluate a particular state's level of preparedness. [We don't] rely on a particular state's or region's response plan—it may be a component of [our] response plan, but doesn't guide [us].*
- *Minnesota's preparedness for a hazardous materials incident in general is good. They understand flammable liquids. People read things in the press about volatility—that didn't help first responders. Bakken is somewhere between diesel fuel and gasoline—it's less flammable than gas. It's important to do risk analysis, crude is not more dangerous than propane.*
- *It's tough to compare state to state or within regions—how much pipe versus rail? Rural or urban? Lots of agriculture or privately-owned land?*
- *We're not really in the business of oil transportation in Minnesota. Plus, it's not our role to evaluate the state's preparedness.*
- *We've had request for crash trucks, like what are used at airports. But jet fuel and crude are very different. Most crude is more volatile than jet fuel—you can't just bring a crash truck out and put out the fire. If you had pre-staged response equipment, even if you're as ready for it as you can be, you would not be able to put it out. We need to keep the oil in the tank cars. And if it gets out, we need to minimize the footprint. We need to evacuate, shelter people.*

Planning

Pipeline and rail companies are required by both the state and federal governments to have emergency response plans. Interviewees cited these requirements when describing their emergency response planning processes. Many again also pointed out that emergency response planning and training requires an all-hazards approach, and further, that a spill may not necessarily involve hazardous materials. Companies underscored that they plan and train for all types of potential emergencies. At the same time, some expressed concern or skepticism that Minnesota's recently passed oil transportation safety legislation would have much effect.

Examples of comments:

- *Focus on risk data; high consequence areas need more attention – people, waterways ... But rural areas – they need to know response times ... Risk-assessment is a constant and on-going process.*
- *PHMSA regulations require all companies to exercise the response activities listed in the spill response plans. [We] adhere to the guidelines for all of our response to incidents. We keep the documents associated with all our tabletop exercises. Our procedures require that we train our personnel annually on how to respond to a spill event.*
- *We're required to have emergency response plan in place per DoT and PHMSA regulation. This includes training, internal audits, pipeline inspections ... We are currently revising our inspection process for pipelines.*
- *We would respond in accordance with federal, state and local regulations. In addition, we use applicable industry safety standards such as API 1161, 1162 and control room management. Next, we follow the National Preparedness for Emergency Response Guidelines as developed by EPA, USCG, DOT and BSEE. We conduct notification drills to our qualified individual on a quarterly basis, annual equipment deployment per Response Zone, and annual tabletop exercises in which we practice for an oil related incident utilizing our response plan. In response to an actual event, we have contracts with oil spill response organizations (OSROs) as well as an emergency response team that has been trained to respond to an oil spill emergency in accordance with OPA 90, Spill Prevention Control and Countermeasures, Resource Conservation and Recovery Act and OSHA. A Pipeline Emergency Response Plan is maintained in accordance with PHMSA part 194 for the pipeline systems and covers multiple response zones in Minnesota.*
- *A derailment could be either a non-accident release, accidental release, or a regulated or non-regulated release. Emergency response doesn't always mean hazmat response. Spilled soybean oil into a lake or river is a bad accident – whether a regulated vs. non-regulated commodity, we have to respond to every spill. [We have the] capability to respond to any type of spill – Class II, Class III flammable ... [our] efforts are on-going and revised for particular scenarios as needed.*
- *[We hold] training and drills on a regular basis to inform operating and response personnel of their responsibilities in the event of a spill incident. Exercises accomplish a number of emergency preparedness objectives. They:*
 - o *Validate emergency plans.*
 - o *Validate emergency response training.*
 - o *Familiarize personnel with roles and responsibilities.*
 - o *Practice the skills of emergency response.*
 - o *Identify opportunities to improve emergency plans.*

- *Test equipment.*
- *Test procedures and protocols.*
- *Develop working relationships with other emergency response organizations.*

Throughout most interviews with company representatives, it was **common to hear that their organization had for years already been actively engaged in emergency response planning and training, and that while the new legislation was probably a good thing, it would not have much impact on those efforts.** Similarly, companies expressed that they tended to rely primarily on their own equipment and personnel, including OSRO, in the event of an emergency.

Some examples:

- *[We own our] own firefighting trailers, which are strategically placed along rail routes. Equipment is second to none. We have sufficient quantity, and is quickly deployable. Don't need to change anything.*
- *Mutual aid agreements with border states. There are a lot of sharable assets available.*
- *[We] transport [our] own equipment so we don't have to rely on a contractor. [We] do use contractors for many things – storage, clean-up, etc. largely self-reliant for immediate response needs. Have all [our] own equipment and frequently share with others if need arises. Rolling stock plan includes list of assets.*
- *CAER group equipment in Red Wing, Washington, Dakota.*
- *[We are] committed to a high-level response. Committed to adjust and improve when deficiencies are noted.*
- *Don't know exactly where state's assets are. But if [we were] called upon for assistance, [we would] be there. Have also approached pipelines about our assets and theirs, and will share if needed.*
- *It would benefit everyone if the recently passed legislation requirements were implemented exactly as passed, and in a responsible manner. This would improve preparedness. Not optimistic about them actually being implemented as intended when passed.*
- *May need to break down some silos, especially in remote areas where we're not always clear as to what resources are available and who's responsible.*

Coordination and collaboration

MAD asked interviewees several questions to learn about how rail and pipeline companies coordinated and collaborated with local and state emergency responders and others to respond to an emergency incident. Examples included training provided by companies or state agencies to local responders, information shared at state or regional conferences and meetings, and other outreach efforts. Some companies offered examples of either formal or informal agreements they held with one another, with an association such as the Wakota or Redwing CAER groups, or their contractual relationships with one or more OSRO. All expressed that they have good working relationships with local emergency responders in the areas they operate.

Examples of comments:

- *"Public awareness" is important—Identify stakeholders: general public, excavators, emergency responders, etc. establish relationships if one doesn't already exist. Get to know government and public officials at all levels, especially locally, on the ground and in urban areas. Always have a direct contact name and phone number on the ground.*

- *Share one plan with appropriate local, county and state responders and officials. On the micro-level, meet monthly with local fire chiefs, Saint Paul Park police chief. In November we will be meeting with officials from Saint Paul Park, Cottage Grove and Newport. Holding a training in January.*
- *[We have] the equipment needed to respond and contain pipeline releases and other incidents that could possibly occur which is included our emergency response inventory. Such equipment is strategically placed at various locations along our pipeline rights-of-way. While external resources may vary depending on the size of the department, [we have] the ability to respond to any incident along our pipeline. Additionally, [we have] programs to assist with training, safe community grants and in-kind contributions to assist local emergency responders with their needs.*
- *We meet with and educate “priority” emergency responders: We aim to meet emergency responders most likely to respond (generally fire departments within a 5-minute drive time of the pipeline and the 9-1-1 dispatch centers dispatching those departments) every other year. We are targeting these agencies through presentations, meetings, exercise participation, facility tours, one-on-one conversations, other in-person outreach and our online education program.*
- *[We are] frequently involved in mock spill response drills in cooperation with local fire departments and hazardous materials responders. These drills are performed across the system. During the conduct of the drills, actions taken by the responders are noted and any problems that arise are resolved as soon as possible. [We] participate in TRANSCAER (Transportation Community Awareness and Emergency Response), a system-wide community outreach program to improve planning and response for the transportation of hazardous materials. [We] sponsor and assist in drills with Wakota CAER, Red Wing CAER and other local community groups to complete drills.*
- *When a tabletop exercise is scheduled, the operations manager of the location will invite all first responders to join the exercise in the role of the Unified Command (UC) as the local emergency responders. This is a very effective approach to educate the local first responders of the pipeline response procedures.*
- *Local operating offices participate in annual industry meetings which first responders are invited to attend. During these meetings various presentations are provided which outline general response tactics. Also first responders are provided with Operator specific contact information via a meeting book and all represented companies have personnel present to answer Operator specific questions. In addition, as part of our ongoing drill program applicable first responders and various regulatory agencies are invited to participate with our table top drills.*

Training

Almost all interviewees emphasized the importance of training in preparedness efforts, and several discussed the importance of preparedness exercises and drills (which can be connected to training events). Most, when asked, indicated that they did not have the capacity or inclination to evaluate the capability of personnel other than their own. All interviewees noted some form of evaluation of training.

Several interviewees talked about the training that has been and will continue to be provided to first responders. Some gave examples of the training they paid for their own personnel or local and state first responders to attend. **Many expressed the importance of coordinating training with the particular needs of the local or state agency, or region (such as in a rural versus an urban area), and that it was also important to be aware of the capabilities of local first responders throughout the**

company's rail or pipeline route. Some expressed concern that if they provide training that isn't taken advantage of, then it's a waste of their resources.

Examples of comments:

- *Responders can apply for funding to address gaps in their response capabilities. Last year, we provided more than \$32,000 to Minnesota emergency response agencies through our Safe Community Program. We also donate used fleet vehicles to first responders. Continuous improvement is a key requirement for public awareness and we continuously evaluate to improve our systems. Also, we invest in our online Emergency Responder Education Program which we provide to emergency responders free of charge.*
- *Local operating offices participate in annual industry meetings which first responders, who are invited to attend. During these meeting various presentations are provided which outline general response tactics. Also first responders are provided with Operator specific contact information via a meeting book and all represented companies have personnel present to answer Operator specific questions. In addition, as part of our ongoing drill program applicable first responders and various regulatory agencies are invited to participate with our table top drills.*
- *Requiring first responders to attend training is necessary and appropriate, but it's not currently required. Many large metro departments declined to participate in crude by rail training. We can't continue to tie up assets and ask others to tie up assets and travel long distances if people aren't going to show up for trainings. It's not cost-effective to bring training to every community along a rail line. Large regional training is most effective. But if only 10 out of 30 people show up, it's not worth it. Specialized training equipment is not cheap to cart around the country for training. Should require more NFPA training. First responders need to be taking real coursework (e.g. chemistry), especially if they're getting degrees or certifications. Needs to be expert driven. Firefighter upper-management and state regulators should be required to cooperate more and learn from railroads and their experts about what needs may be unfilled in coursework and equipment.*
- *As part of the National Preparedness for Response Exercise Program (NPREP) requirements, we conduct equipment deployment drills and table top exercises annually, often involving state and local responders. Historically, our exercise totals have exceeded the requirement under NPREP (National Preparedness for Response Exercise Program).*
- *We have a lot of interaction with public, informing people of hazmat in communities. We train 1000 first responders in MN—that's year to date. 969 responders, to be exact. About 90–95% are firefighters, others would be sheriffs or deputies. These are instructor-led sessions, where we're explaining our plan and talking about their first steps if there's an incident.*
- *We require that all Operating Personnel attend spill prevention briefings that are held at least bi-annually. This training includes instruction in the following:*
 - o *Operation and maintenance of equipment to prevent oil discharges;*
 - o *Applicable pollution control laws; and*
 - o *Spill containment and cleanup procedures.*
- *We hold internal training for the company's emergency response staff. The training course—Hazardous Materials Emergency Response Training—is held annually for all Hazardous Materials Emergency Responders. The 40-hour program consists of the following:*
 - o *First Aid and CPR;*
 - o *Respiratory Protection Equipment;*

- *Chemical Protection Equipment;*
- *Instruction and Techniques for Detecting and Evaluating Potential Exposure to Hazardous Materials; and*
- *Safe Gas and Liquid Transfer Operations.*
- *Typically, over half of the training involves hands-on training exercises in the use of monitoring equipment, personal protective equipment and equipment for transferring contained and fugitive liquids and vapors. Personnel training logs are maintained for our operations and response personnel.*
- *Our employees, some of which are first responders, are trained on the following: Annual classroom training on the use of emergency procedures, the ICS (Incident Command System), and use of the Response Guidebook; response team members in Minnesota also take part in a 2-day collaborative spill drill to exercise a full boom deployment exercise that occurs in North Dakota. The training is designed to fulfill the requirements of 49 CFR 194.117.*

Resources

MAD asked rail and pipeline company representatives about equipment available to respond to an oil transportation incident, and whether those resources are sufficient. Several interviewees indicated that it depends on the type of incident and location in Minnesota, and that they could not comment on local or state preparedness levels. At least one company responded that they do specifically rely on local fire-fighters to provide initial response to an emergency. But most noted that their emergency response capability is not contingent upon state or local resources, except in the cases of those who contract with one or more OSRO, or who are members of one of the state’s CAER organizations.

Interviewees reiterated that they largely rely on their own response capabilities. Some pipeline companies interviewed have refining operations within Minnesota. These companies maintain their own on-site fire fighters and equipment, although for an incident not in close proximity to the refinery, other resources are relied upon. Most companies provided MAD with lists of the equipment available, and its location within Minnesota. In some cases interviewees answered that their contracted OSRO was responsible for maintaining the equipment necessary to respond to an incident. **Some also warned against simply purchasing additional equipment just for the sake of having it, citing perceived abuses of post-9/11 Homeland Security grant programs.**

Local Resources

Interviewees explained that most fire departments, regardless of their location, would not have sufficient resources—in terms of training or firefighting materials (foam, in particular)—to respond to a significant oil fire incident. Some interviewees questioned whether, even if a fire department had sufficient foam, there would not be enough water available to extinguish a significant fire (activating foam requires water). Some larger fire departments have additional supplies of firefighting foam, but even these locations would struggle to respond to a significant fire. In some areas, such as where a USCG or other military base exists or there is an airport nearby, additional substantial fire-fighting resources may be available.

Examples of comments relating to resources:

- *Quite a bit of equipment available at the refinery itself. A lot of equipment – ladder truck, pumper truck, foam tanker, three foam trailers that hold more foam and a 1,500 gpm nozzle, 3 primary, large enclosed*

trailers just for hazmat response, decontamination trailer, trench rescue trailer, hazmat truck with suits, SCBAs, bunch of other equipment. Rescue truck for confined space or high-angle rescue. 3 boats and plenty of boom for a river incident.

- *Firefighting—we have large foam trailers. One is in Fargo/Dilworth one is in Minneapolis and one in LaCrosse. We've looked at our track and where we move crude. We aim for 100 to 150 mile radius of crude and ethanol routes. We are well within that in Minnesota. Each trailer has two tons—550 gallons. We spray that at a 3% rate—so there's a lot of foam generated from that amount of concentrate. We can remove sections of trailer to fight two parts of the fire. If we had incident between Fargo and Minneapolis, we'd roll the Dilworth and Minneapolis trailer, and we'd run the LaCrosse trailer too if we needed.*
- *The local fire departments are utilized for fire suppression, and foam applications where applicable. We contract with Oil Spill Response Organizations (OSRO) for oil spill response and believe the OSROs are adequate to address our spill response needs.*
- *When we show people our foam trucks and explain, people get it. But initially, when we say we hope for a 2 hour response ... they picture our foam trailer being a fire truck. But that's not it. Normally when you have a release there's a substantial hole in the car, maybe a 6 inch hole. It will be draining a lot of oil. If it ignites, there's not a lot you can do. You might have 20,000 gallons of crude on fire. The foam truck can help to a point, and later as it is containable.*
- *Depends on location and weather, but normally there's a hazmat rep or contractor there within 2 hours. But during that time period, we are on the phone talking with people on scene and saying what resources are coming and what we will do. They aren't standing alone for 2 hours waiting. Compared to other states, we have quick response times in MN. In other states we just don't have people everywhere—there's a large territory with few population centers. The response time there may be 5 hours.*

Changes underway to enhance preparedness

MAD asked interviewees for information about changes they may be making to enhance preparedness for oil transportation incidents. Most industry representatives answered in one of two ways (or both)—by saying that their company always maintains the ability to respond to an emergency, and that they are always in compliance with the relevant state and federal requirements for such preparedness, or by simply saying that no changes are needed.

Examples of comments:

- *We will continue to promote/evaluate our current training until material will be available from AAR, API, TRANSCAER, and PHMSA. This material will be universal and one voice for all industry. We are working closely with the AAR, PHMSA, our customers and others in our industry to improve the safety of crude-by-rail transport. We are carefully evaluating the process by which we determine freight routes and looking at following the same route protocols that we follow when we transport hazardous materials such as ammonia or chlorine.*
- *Continuous improvement is a part of how we do business and our culture, especially when it comes to our exercises and training programs, and how we respond to an actual event. Examples of continuous improvement over the last two years include:*
 - o *Helicopter and hangar in Bemidji to enhance the ability to transport equipment to remote locations*
 - o *Improvement in operations and training in our Control Center*

- *Development and approval of the Integrated Contingency Plan (ICP) as the company's Emergency Response Plan.*
- *Advancement in training in the Incident Command System (ICS)*
- *Implementation of an Inland Spill Tactics Guide, a cutting-edge tool on release response tactics*
- *Development of free online training for first responders and 911 centers*
- *We will soon be evaluating mutual aid agreements with municipalities that would be impacted by an incident, e.g. Cottage Grove and Saint Paul Park. This likely will lead to more training.*

Evaluating Preparedness Efforts

Industry interviewees gave examples of few ways they evaluate preparedness efforts, and responses were fairly standard across interviews. Most again cited that they maintain compliance with relevant state and federal requirements, for example, by providing training, having an up to date emergency response plan that includes a worst-case discharge scenario and the subsequent response, and conducting periodic drills, exercises, and any required inspections (in the case of pipelines, all route sections must be visually inspected a minimum of once every two weeks). **Table top exercises, after action reviews, and drills were the most frequently cited examples of preparedness evaluations.**

Some industry representatives said they do not evaluate the adequacy of state or local preparedness levels. All those indicating the use of contractors said they evaluate their preparedness based on actual responses to incidents or performance in drills, and require periodic audits of equipment and other resources.

The following are comments from industry representatives:

- *De-brief after exercises. On-going evaluation of the day to day work going on inside the refinery.*
- *We utilize employees and contractors in our response drills. We conduct post drill reviews after each drill.*
- *The company uses organizations and contractors to respond to incidents. These are evaluated during real events.*
- *As for evaluating our emergency response efforts, an after action report is conducted for major events.*
- *Post Incident Analyses (PIA) are also conducted to ensure that incidents are reviewed and that any "lessons learned" are used to improve the group's ability to respond to hazardous materials incidents.*

Recommendations and Advice

Rail and pipeline representatives offered some advice and recommendations to enhance preparedness to respond to an oil transportation incident. A few cautioned against spending money before having a better idea of what equipment and training were missing, if any, and where these added resources would be put. One interviewee commented that,

- *In a rail incident, a trained responder with a pipe wrench can do more than a \$1 million hazmat rig with no one with training. The answer is not equipment—if it was, our inventories would look very different ... We don't think that having these foam trailers everywhere would change any outcomes.*

Most observed that in the case of fires involving crude oil, it is almost always the case that the appropriate response is to let the fire burn itself out or at least down to a manageable level. Some added that it is very difficult to convince firefighters not to try and put out a fire. Interviewees also

frequently noted that they were already the best prepared, both from an equipment perspective and having access to properly trained personnel, to respond to an oil transportation incident.

Some other recommendations and observations were offered, both specific and general:

- *Prepare for regional responses and avoid focusing on local communities and fire departments. It's a struggle. We look at all fire departments along our lines. Each may have less than a mile of track. We have to train those guys. Doing it locally makes it too hard, there's not as much coverage. We want to make sure responders attend the training, we want to utilize the fire marshal to do regional training.*
- *Train one regional fire department in areas outside an OSRO immediate coverage area and provide with a spill trailer.*
- *Should focus on high risk areas, may mean very little attention to needs in rural parts of the state. Also, need to assess which is the biggest or most likely and more disastrous event—pipeline or rail accident? They face very different risks.*
- *An oil transportation specific training program should be developed emphasizing simulated hands on responses.*
- *Look to other states and the NTSB for comparisons/examples of responses to major oil transportation incidents.*
- *There's a catch here—there's no regulation for a first responder to attend a class on railroad response, but we're required to train firefighters every three years. We could provide a class every day for a year, but it remains up to them to respond and attend. We can't force people to go. We can go up and down the state ... but if there's no requirement on their end ... This can be frustrating.*

State Agencies

MAD interviewed representatives of agencies that have responsibilities connected to response to an oil transportation incident. Most interviewees have firefighting and hazardous materials training and experience; a few others have emergency management experience. All interviewees have many years of experience in their respective subject areas and in public service generally.

General perspectives

Several state interviewees discussed the relative risk of crude oil compared to other hazardous materials. They agreed that while oil (and shale oil from the Bakken fields in particular) is a potentially dangerous material, there are other materials that present more of a public safety risk, such as chlorine and anhydrous ammonia. Bakken crude poses additional challenges compared to Canadian crude oil because of its volatility and other properties. These interviewees explained that challenges are amplified because of the increased quantity of Bakken crude being shipped in Minnesota. Though there are unique challenges to Bakken crude, interviewees with hazardous materials experience indicated that first responders would use the same basic approach as is required for any other hazardous materials incident.

State interviewees with firefighting and hazardous materials experience generally agreed about the proper response for local responders: if there is a significant Bakken crude fire, the best thing to do in most situations is clear the area and let the fire burn. One interviewee outlined the main duties of local first responders—this list was harmonious with the perspectives voiced by other interviewees:

- *Here's what I'd say are the first responder tasks in a pipeline or rail incident:*
 - o *Be aware that it's [the potential hazard] there—that's particularly true for pipelines.*
 - o *Do safe initial reconnaissance—look at the incident from a long way away. Is it a big or little spill? Look on placards to see what the material is.*
 - o *Do the required notifications: tell the company, call the duty officer.*
 - o *Isolate the area so people do not drive in.*
 - o *Monitor the air to make sure people are safe and that you evacuate the right areas.*
 - o *If needed, do a thoughtful evacuation. (First responders can be trained on how to do that.)*
 - o *If possible, do whatever you can to contain the spilled oil. Fire departments can put in diking and containment boom. That can make a big difference.*
 - o *Cooperate with the responsible party when they arrive.*

A few state interviewees remarked that hazardous material transportation in general (and oil transportation in particular) has improved over the years—there are fewer significant pipeline ruptures and rail accidents, and companies have taken significant steps to increase safety. That said, these same interviewees were among other state interviewees who indicated that additional prevention efforts are warranted. Indeed, state interviewees often emphasized that *prevention* of an incident is the best approach to oil transportation safety.

A few state interviewees discussed differences between rail and pipeline transportation of oil. In some respects, pipeline transportation of oil is safer than by rail—rail is more prone to accident and fire. However, both rail lines and pipelines are routed through environmentally sensitive areas and very populous urban areas—if an incident occurs, the consequences could be significant.

A few state agency representatives discussed the cyclical nature of concern regarding hazardous materials.

Examples of comments:

- *There is an ebb and flow to hazmat attention. Our biggest response concerns used to be chlorine or anhydrous ammonia—we don't see that level of concern anymore. But because of education and increased training, responders know how to protect themselves; they know not to go into a vapor cloud. Over the years, bad things have happened, and there are lessons learned. Bakken will be similar. Once it's been around for a long time, more people will understand what we're dealing with.*
- *There's close to a ten year cycle on public attention and awareness about oil—an incident occurs, and there's attention, but then the concern diminishes.*

Preparedness and response capacity

Minnesota's response framework

State agency representatives generally agreed on the preparedness framework for an oil transportation incident. The following information is compiled from their various responses:

- Private sector: The companies transporting the material have the ultimate responsibility for responding to an incident. Companies are also required to offer information to local first responders.

- Local first responders: Local first responders are incident commanders and provide direct firefighting or public safety response within their capabilities. Some areas have city or county hazmat teams.
- Chemical Assessment Teams (CAT) and Emergency Response Teams (ERT) are coordinated by HSEM. Typically, these teams are housed in local fire departments; they have additional funding and training through HSEM. There are ten CATs; two locations with CAT teams also house ERTs. Both CATs and ERTs are trained and equipped to assess chemical events, such as through reading meters and understanding results, and their role is to provide advice to local authorities. ERT teams are larger and have additional capacity compared to CAT teams. As examples of activities ERTs can perform that a CAT cannot: put a leaking cylinder in a container, put on protective equipment to go shut off a valve.
- Mobile Medical Teams can provide medical services during significant incidents. These volunteer teams are coordinated by MDH; there are two teams in Minnesota—one in central Minnesota and one in the Twin Cities.
- State agency responsibilities range widely:¹³⁹
 - The state duty officer is the hub for alerting state agencies to a hazardous materials incident.
 - State agency hazardous materials experts from MnDOT, HSEM, MPCA, Agriculture, and Health can offer advice to local responders on scene or by phone.
 - State agencies also enforce regulations related to prevention of oil transportation incidents, including spill prevention and environmental response preparedness, pipeline safety, hazardous materials transportation safety. Some state agencies can call drills to test preparedness for spill incidents.
 - State agencies provide information and training relating to hazardous materials through outreach efforts across Minnesota.
- Federal government: The federal government has a role in prevention (through safety regulations) and response to significant events (such as events requiring mass care). The federal government also supports preparedness through grants.

Interviewees generally expressed favorable opinions about the overall framework for response in Minnesota.

Example comments:

- *Very few states have systems as good as Minnesota; for example, only one other state has a duty officer program that is accessible to any public safety responder.*
- *I'm confident in people at the state level, and I'm confident in local responders to know what to do—even without specific training and equipment.*

Health system

MAD asked interviewees to describe coordination efforts connected to medical response to an oil transportation incident. A few interviewees indicated that the role of medical services may not be as

¹³⁹ Several state interviewees described limited roles in prevention and preparedness efforts, including federal authority or preemption, limited funding, or limited statutory mandates.

critical in an oil transportation incident as in other hazardous materials incidents—because oil is generally less harmful than other hazardous materials, injuries from a fire would be the most likely scenario that would lead to the need for medical care.

Interviewees who offered opinions indicated that there have been efforts to include medical services in all-hazards planning (such as in specific communities' plans or drills), but these efforts are not widespread and have not focused on oil transportation incidents. A few interviewees indicated that health preparedness, particularly mass casualty planning, is a relatively new area of focus that warrants further attention; this attention is needed generally, not just regarding oil transportation incidents. Interviewee information indicates that health preparedness activities have been scaled back in recent years due to federal funding reductions.

Example comments:

- *In general for hazmat, there's good coordination between locals and HSEM and with PCA on the spill side. But there's a whole new piece in health preparedness generally—looking at mass casualty is new within the past 2–3 years. We all really need to think about this.*
- *EMS and health have done a lot on their own. This is another silo to integrate.*
- *During drills, typically, once “victims” are initially treated and loaded onto ambulance/evacuated/released/etc., there's really no attention to the next phase(s) of the health care response and resource needs.*

A few state agency interviewees noted that the **limited number of dedicated burn beds in Minnesota could be problematic if there were a significant oil transportation incident**. Most hospitals could provide basic care to burn victims, but specialized care would likely be needed. Interviewees reported that the state has only about 35 licensed burn beds, all of which are located in the Twin Cities metropolitan area; almost all burn beds are full on any given day.

Perceptions of preparedness

MAD asked interviewees to provide their assessment of Minnesota's preparedness to respond to an oil transportation incident, using a scale of one to five. A few interviewees were reluctant to put a numerical value on preparedness. Those who did provided a range of responses; the majority of state interviewees gave an answer in the 3–4 range, none gave the state a 5.

Examples of comments:

- *We're at 1 or 2. We are behind the curve in catching these issues. [Example of leaking rail car that wasn't detected promptly.]*
- *A 3—middle of the road. We've got a lot of things in place, but we can do a lot better—especially in the area of collaboration and coordination.*
- *Statewide, a 3. We're not unprepared, but also not fully prepared. The new training will get us to a 4.*
- *4: compared to other states we do a fairly good job.*
- *At least a 4 if not more. Since I don't know all the details on what equipment the private sector has staged, and since we've never had a large incident involving rail, I wouldn't go higher than a 4.*

MAD also asked state interviewees to consider how prepared Minnesota is for an oil transportation incident compared to other hazardous materials incidents. Some interviewees emphasized that while a responder's initial approach would be similar regardless of the type of hazardous material, there are differences in the types of risks posed by different material.

Examples of comments:

- *There's a difference in hazards, but it's a similar process for response. In some ways, we are better prepared for responding to an oil incident than for other products. Responding to a chlorine incident is very different than responding to other hazardous materials, and we are very under-prepared for that. You can't compare preparedness for other, more harmful, materials with something like oil that probably isn't going to kill people but is still hazardous.*
- *It's not that we're unprepared for oil, but it's about some of the specifics. We have lots of experience with other types of incidents. We haven't done training together on oil, so I'm not sure.*
- *Oil is much more challenging in terms of volume and impact area. Trains run through urban areas – there's a major part of the population exposed.*
- *We've been training on gas and ethanol, we've been training on hazmat. Part of what is going on seems to be connected to a lack of confidence.*

Planning

Several state agency representatives talked about the importance of emergency response planning: pipeline and rail companies are required to have emergency response plans, and state and local governments have emergency operations plans. Among these interviewees, some commented that **recent changes have enhanced planning for emergencies.**

Examples of comments:

- *[Local planning] is much better than 5, 10, or 20 years ago. There is a lot more understanding that the local department often can't respond to many incidents alone—they need help from other locals or the rail/pipeline companies, and even specialized contractors. They are learning that they need to plan for the possibility of evacuation or mass shelter [in response to an incident].*
- *MPCA's review of the rail companies' emergency response plans will be helpful. There are standards for response times now—the companies have to be prepared for a 48 hours response for the entire event. An evaluation of a 10% spill event is a good test—it's unlikely that an entire train would rupture and spill.*

Coordination and collaboration

MAD asked interviewees several questions to learn about how state, local, and private sector responders coordinated and collaborated. Examples offered by state interviewees often involved information sharing—typically *from* private sector or state resources *to* local governments—rather than coordination on activities emergency planning. Examples included training provided by companies or state agencies to local responders, information shared at conferences or regional meetings of first responder associations, and other outreach efforts.

Examples of comments:

- *Up to now each of these groups was planning separately. The rail and pipeline companies have a good response plan, but it may not have been known to locals ... More conversations are happening now [because of the legislation].*
- *It can be challenging to get local first responders to see that the relationship is different for companies with hazardous materials than other businesses—there are different legal obligations, and it’s important to press the companies to participate in planning and exercises.*
- *Pipeline companies have primarily been providing very basic information—more on the order of “call before you dig” than comprehensive awareness training.*
- *[Speaking of coordination in a similar context to illustrate a point] Facilities with hazardous materials are required to provide information to local government. That’s supposed to be a tool for company and first responder coordination—but that hardly ever happens. The information goes to fire departments, but there’s not a conversation, and the departments don’t have time to do anything with it.*

State interviewees with hazardous materials response experience spoke favorably about the coordination between state agencies and local government responders at the scene of incidents and during after action reviews.

Several state interviewees discussed the importance of the quarterly meetings of state agencies involved with hazardous materials response. These meetings are coordinated by HSEM and include agencies such as DPS, MnDOT, MPCA, and Agriculture. Bakken crude transportation has been a frequent topic at these meetings in the past year and a half. Other topics have included radio frequency use, chemical suicides, and agency role clarification.

Example comment:

- *We all want to get together and talk, and we discuss lessons learned if needed. We cover the good and bad.*

Some state agency interviewees offered advice and recommendations on communication and collaboration, which is described on page 125.

Training

Almost all state interviewees emphasized the importance of training in preparedness efforts, and several discussed the importance of preparedness exercises and drills (which can be connected to training events).

Several interviewees talked about the training that has been and will be provided to first responders:

- The level of training that has been provided by pipeline and rail companies in Minnesota is typically awareness level—this has been particularly true of pipeline companies. A few interviewees indicated that the training offered by the rail companies has been sufficient to build awareness and understanding, but that fire departments may have been unaware of the training. A few interviewees hoped that pipeline companies would become more involved in providing training.
- The new training being offered to fire departments is geared at developing awareness of oil transportation incidents. Interviewees familiar with the training explained that they hope to

build a uniform basic understanding from which to build in coming years. As the new training is being developed, HSEM is trying different versions of the training in different locations.

Examples of comments:

- *The first two years will be about building awareness, and then identifying gap areas for more training or equipment.*
- *Right now we have to start with awareness so we don't get them [firefighters] killed. Then we can show a menu of other classes—operations and technician level. There aren't as many departments that would qualify for that level of training, but it's important to know that there is more to it than awareness.*

Many state agency interviewees expressed concerns relevant to training:

- Resources are limited for training—it can be challenging for departments to send staff to training, and state agencies have limited resources to conduct training and outreach.
- Staff turnover in fire departments and other responder organizations means that repeat training is necessary.
- Firefighters who are certified have basic hazmat training; however, some smaller departments do not have certified firefighters, so there is a small group of firefighters who do not have this basic training.
- Rural fire departments do not get enough training in hazmat generally.

State agency interviewees offered advice and recommendations on training, especially regarding the level of training that would be appropriate for local first responders. This advice is described on page 130.

Resources

MAD asked interviewees about equipment available to respond to an oil transportation incident, and whether resources were sufficient. Several interviewees indicated that it depends on the type of incident and location in Minnesota.

Private sector

Several state interviewees emphasized that not only were private companies the appropriate responders for a rail incident fire or spill because they have the right equipment and personnel, it is their obligation to respond to these types of incidents as the responsible party. Rail and pipeline companies have resources available, but they may need to call in industrial firefighters if the incident is significant.

Several interviewees described the general resources available from the rail and pipeline companies: trained contract hazmat teams, equipment caches, fire trailers, spill containment and clean-up equipment.

Though a few interviewees expressed confidence in the resources available from the private sector, a few interviewees expressed concerns about the availability of private sector resources. These concerns included: whether companies can truly share resources when needed, and whether local governments are fully aware of private sector resources. An example comment:

- *CP and BNSF have contract hazmat teams all over. I think there are at least 16 teams in MN. They are available to respond, and they have resources that can be shared. But if no one is aware, that's no good. They also have equipment caches on two sides of state; they could be 2–6 hours away from an incident. Whether the caches and contractors are sufficient will depend on the incident.*

A few interviewees described companies' reliance on contractors to provide response. One noted that there is a limited market for these types of services, so it would not be reasonable to expect more companies to be established and maintained.

Local government

Interviewees familiar with firefighting and hazardous materials response explained that most fire departments in Minnesota would not have sufficient resources—in terms of training or firefighting materials (foam, in particular)—to respond to a significant oil fire incident. Several state interviewees noted that even if a fire department had sufficient foam, there would not be enough water available to extinguish a significant fire.

Some fire departments do have equipment and training necessary to respond to an oil spill, particularly those that have gone through training with the MPCA.

Some larger fire departments have additional supplies of firefighting foam, but even these locations would not be able to respond to a significant fire.

Examples of comments relating to resources:

- *[Regarding equipment necessary to respond to an incident:] Right now, yes, it's adequate. But oil will be around for 20–30 years. The state doesn't have a strategic plan for this—we rely on locals to decide what they need.*
- *The majority of departments have small capabilities, and most firefighters know how to utilize a foam application—but at a small scale, like a truck fire. They are not set up for a big rail train. Most would have 5-10 pails of foam—and these are usually 5 gallon pails. Some departments may have supplies warehoused—rail companies do, too. The question would be is it accessible when there's an incident.*
- *Minneapolis, St Paul, Rochester, Fargo fire departments have foam. Cities with commercial airports would have foam. Most of the state doesn't have that. You need foam to fight these fires. And you need a water source to activate the foam. The foam that's available wouldn't be enough to address a substantial fire at a derailment. But, the first response is not to fight the fire. It's problematic to spend time and money to supply enough foam when it's not the recommended response.*

Several state interviewees indicated that additional information is needed before determining whether additional supplies of firefighting foam or other resources would be helpful, and where it would be best to position those resources.

State agency interviewees offered advice and recommendations on resources, which is described on page 132.

Changes underway to enhance preparedness

MAD asked interviewees for information about changes they may be making to enhance preparedness for oil transportation incidents. Most agencies described some changes which are directly or indirectly related to oil transportation safety. These changes include:

- The Public Utilities Commission is exploring ways to include safety issues where possible in their permitting oversight capacity.
- DPS is focusing on increasing education and communication about oil transportation safety. As examples:
 - Offering training as required to fire departments, particularly reaching out to smaller communities.
 - Communicating at conferences and regional meetings.
 - Advising communities to include oil transportation safety in their emergency operations plans.
 - Expanding efforts to collaborate with pipeline and rail companies, particularly regarding training.
 - Sharing information with first responders on the Homeland Security Information Network—there is a new special section on oil. The network is a secure location to share information.
- MPCA is reviewing the environmental preparedness plans and take-home drills for Class 1 railroads, and they hope to conduct similar evaluations of pipelines. MPCA is also examining ways to gather information about response capacity for rail and pipeline companies and their contractors. The agency is also making changes to better assess and enhance preparedness and to better communicate with the public (beyond pipeline and rail).
- MnDOT's work is primarily connected to preventing rail incidents. The agency is focusing on the 2014 legislation, making sure that the rail cars are meeting requirements, that they are placarded properly and communicating. MnDOT has filled a new position to regulate rail hazmat transportation; the position focuses on crude and ethanol. MnDOT is also expanding track inspection efforts and preparing a legislative report on grade crossings.
- Though not directly connected to oil transportation safety, MDH reported that it is working with partners on a surge plan focusing on burn response.

Evaluating Preparedness Efforts

Some state interviewees discussed the difficulty in evaluating preparedness efforts before an incident.

Examples of comments:

- *It's tough: if this never happens, how do we evaluate preparedness? This is emergency management's conundrum. You have a plan for a tornado or a plan for H1N1—how do you know it's successful if neither of those things happen?*
- *Preparedness is difficult to judge ... There's not a yes or no on preparedness. Now that there are timelines associated with response for rail companies, we can evaluate plans and resource availability using that as a measurement.*

- *For me, the basic question on preparedness training, equipment, and everything is this: Is it making us safer? That's a tough question to answer.*
- *[Regarding difficulty with applying a rating to preparedness efforts] Applying a grade to readiness should be based on performance metrics that should be defined.*

A few interviewees described the importance of after action reviews.

Examples of comments:

- *Preparedness is best measured after the fact. ... We can disagree about whether a plan is sufficient ... After a spill, a preparedness failure is glaringly apparent.*
- *An effective critique after an incident is important—it can be tough to do honestly. HSEM does well at encouraging effective criticism after incidents.*

A few interviewees suggested that **drills, simulations, and exercises** are the most effective way to evaluate whether preparedness efforts are working before an incident occurs:

- *Unannounced or announced drills to test response plans can be very effective way to evaluate preparedness: We may look at a [spill response] plan and say to the company—“you’re not ready.” Sometimes, the company will disagree. So we essentially say, “ok: show us how ready you are.” The proof is easy to see: the [shutoff] valve won’t turn, the resources don’t come. But all of that [setting up and executing drills] is very labor intensive.*
- *Conducting and evaluating table top exercises are also useful: We know there’s a relatively low understanding [among local first responders]. We want to know the gap, and the table top exercises will show the gap ... Table top exercises are more manageable and easier to implement than full scale exercises.*

A few interviewees emphasized the need to **evaluate the new training being offered. Examples of comments:**

- *Success will be that people took the training being offered.*
- *Look at things like how many responders are trained out of the total population of responders. Does the training address the needs of the responder, the public, and the pipeline operator? Does the responder understand and retain the important elements of the training?*
- *Make sure there is a review process to validate and improve the training after any incident.*

From an environmental perspective in particular, a few interviewees emphasized the importance of reviewing response plans, and noted that the 2014 legislation sets some timing criteria for response to rail incidents.

Recommendations and Advice

Many state agency representatives offered recommendations and ideas to enhance preparedness and build capacity to respond to an oil transportation incident.

Training

Almost all state interviewees emphasized the importance of training in preparedness efforts.

Training advice generally focused on the new training efforts that are underway as part of the 2014 legislation. Specific advice included:

- Ensure that training is **delivered to as many first responders as possible**:
 - Not all fire departments require certification, so some firefighters may not have even basic hazmat training.
 - Make sure that rural fire departments have access to training—bring the training to them as much as possible.
- Build a better awareness of the hazards of oil (particularly Bakken crude) so **first responders understand that the best response may be to let the tank car burn** until it is possible to extinguish the fire.
- **Focus training on what is most important to first responders**: when and how to evacuate, what private resources are available, what the real risks are in their area. This was noted as especially important because adult learners may be unable to retain what they've learned if the skills aren't applied.

Examples of comments:

- *The training that will be provided is awareness level. This is typical in public safety training generally: first is awareness, then operations, then technician level. Other groups are doing operations and technician level training for firefighters, but you have to walk before you run. We're trying to get everyone to one level and then expand.*
- *There were gaps in training for local responders. Police departments have been left out entirely. Most area response committees have some mutual aid agreements, but they may not include police, so there's no training at all. They are at a deficit.*
- *That [training offered before the 2014 legislation] was sufficient for railroad and fire response. But moving forward, we need other players to be trained too: sheriff, emergency management, emergency medical. Now it's not just fire on the train or hazardous on the train, we're looking at the whole community. We're looking at people getting a more well-rounded training.*
- *If we do a good job on training, local responders would be able to do the basics: keep people safe, don't worry about getting foam; know where to get the right resources. If you don't have training, do the level of action that you are trained to do.*

Several state interviewees expressed concern about the idea that large numbers of responders should be given advanced oil response training:

- *They need to make sure it's easy and accessible, and that whatever training is funded is appropriate. Local responders don't need to go to rail school—they need the basic response training.*
- *Does each and every fire department need to know how to respond? The possibility of an incident is so slim ...*
- *There's a training center in Pueblo Colorado. The rail companies send people there. That's fine if you're on a CAT team, but if you're from a small fire department ... That could be dangerous: they will never have enough training or equipment to do that type of response.*

A few interviewees emphasized that the training program should evolve over time:

- *After the training, you'd need to follow up: fire officers rotate, or they retire, taking the information with them. The training has to be scheduled so we train them this year and come back in 3–4 years, and keep doing it until they stop transporting oil.*
- *For larger fire departments, where there may be additional experience, the training could include ways to help railroad responders—like assist with uncoupling the train cars.*

A few interviewees emphasized that rail and pipeline companies should be very involved in developing and presenting the new training being offered.

Resources

Many state interviewees stressed that **additional response equipment would not necessarily enhance preparedness**. In particular, some interviewees indicated that **providing additional supplies of firefighting foam to local fire departments would probably not be effective**.

Examples of comments:

- *Word has to get out that the way to protect the public may be not fighting the fire. There are some fire departments that think they are going to fight a Bakken oil fire and put foam on it, but that's not possible given the number of BTUs that are involved. You are not going to put out that fire—it's not going to happen.*
- *I've heard people say we need more caches of foam ... that we'll be able to fight these fires if we have more foam. No, that will kill firefighters.*
- *Firefighters are all about putting wet stuff on red stuff, but there's a science to it. The fact is, there's not enough water anywhere to activate enough foam to fight a big Bakken oil fire. You have to let it burn. I use the analogy of a barn on fire. There's too much fuel in a barn, you don't try to save the barn; you try to get the livestock out and whatever else you can, but you have to let it burn. It takes maturity to say it's too much risk, or to say it's not worth it.*
- *If the fire involved a full car, that will be difficult or impossible to control. But the residual tank—that's potentially manageable. I'm not sure, though, if more equipment would make a real difference.*
- *MPCA has provided fire departments with sorbent and containment boom over the years. The problem has been maintaining the equipment and the training. Some departments have lost track of it, or there's turnover and changing priorities.*
- *Even if we can't respond everywhere in the state right away, and even if it's unlikely that we could fight a big fire, we should be evaluating whether there are some parts of the state where we should be able to provide a response.*
- *If we were to have one group that's got lots of equipment and training, where should they go? There's 5,000 miles of track, and more of pipeline. Where do you put them? And more important: how is that going to be better than what the rail companies have in place?*

A few interviewees connected their opinions about resources with their view that more collaboration and coordination is the key to preparedness—adding resources without coordination would not be helpful.

A few interviewees offered specific ideas for resources:

- Access to additional meters to assess air quality. It was noted that these could be supplied by contractors or companies, or they could be pre-staged in caches that are accessible to trained personnel.
- Medical supplies to support local or volunteer medical providers.
- Additional mobile medical teams.
- If there is a need for more firefighting equipment (such as foam), the rail and pipeline companies should purchase and stage it in appropriate areas.

Improvements to CAT teams

A few state interviewees recommended expanded utilization of CAT teams, such as more direct linkages with private companies, being more active in local preparedness and planning, or providing support in isolation and evacuation efforts. There would be a need for clearly defined roles and responsibilities if the teams were to take on an expanded role, these interviewees noted.

A few interviewees indicated that funding of CAT teams should be reevaluated and expanded. Since the state recoups costs of CAT deployment from the responsible party, there may be a disincentive to sending CAT teams to an incident, according to a few interviewees. Other interviewee information indicated that CAT teams are hard to retain because of the 24/7 staffing requirement.

Better coordination and collaboration

Some state interviewees indicated that there have been barriers to communication and cooperation, or they offered ideas for better communication and cooperation. Examples of problems with communication dealt primarily with past tensions between and among state agencies, rail and pipeline companies, or local governments. As examples:

- Perceived tension between state agencies regarding appropriate roles and responsibilities, sometimes stemming from different missions or fundamental concerns.
- Perceived tensions between rail or pipeline companies and local governments.
- Initial difficulties with launching the new training initiatives required under the 2014 legislation, such as with agencies collaborating on content.

A few state interviewees spoke directly about **collaboration and coordination** being **one of the most important aspects to increasing preparedness**.

Examples of comments:

- *The key is more local- and company-level collaboration— preparedness efforts should fit the area.*
- *The state doesn't do a good job of conveying what resources we have and can bring to bear ... All the agencies should come together on this, and not just for oil ... We should have a unified vision and mission and goal [for hazardous materials]. We have to all get on the same page.*
- *Look at collaborations more for responding to incidents. As part of that collaborative work, identify strategic locations for equipment. Develop plans to get equipment where we need it quickly.*
- *The rail and pipeline companies should form a cooperative or other organization to standardize training (with HSEM and the Fire Marshal) and to share equipment.*

Connected to the issue of coordination and collaboration is the recommendation from a few interviewees that there should be **frequently updated or real time information from rail companies** regarding the materials they are transporting.

Examples of comments:

- *I don't know why we don't get the same kind of detailed information for rail tankers as we do for other hazardous materials shipments.*
- *Responders need to know what is going through towns; they need to know what they need to prepare for.*
- *It would be good to have a limited, need-to-know access to real time railroad database of materials being transported.*

A few interviewees offered **examples of approaches to coordination and collaboration** dealing with oil and other hazardous materials. All of these approaches have some perceived limitations:

- The established quarterly state agency hazardous materials responders meeting. A few interviewees indicated that the group could be doing more, but others described it as a good forum for sharing information.
- CAER groups: These can differ in purpose and scope—from an organization primarily designed to provide information to responders, to an organization that functions more like an equipment cooperative.¹⁴⁰ (A noted drawback with current arrangements is the inability to share human resources.)
- Other states' statewide TransCAER groups that include rail, pipeline, and tucking industries.
- The Western Lake Superior Port Area Committee in Duluth, which is chaired by the Coast Guard. The committee maintains an equipment cache and coordinates training for spill incidents.
- Individual first responder organizations working together, such as communities around the Pigs Eye rail yard.
- The Emergency Response Commission (now disbanded), which was focused on chemical response. The Commission was cited as a potential useful model for collaboration among state, local, and private sector representatives.

An all-hazards approach is important

Several state interviewees discussed the importance of an all-hazards approach to preparedness; they cautioned against too much focus on preparedness for the particular hazard of Bakken crude oil.

- *I don't want too much focus placed on Bakken—there's a lot more to worry about that is much more likely to cause a problem.*
- *I hope departments **don't get sucked into thinking just or mostly about Bakken crude**. The other 95% of cargo and spill potential is still important. We all need to prepare for all hazard response.*
- *An all-hazards approach works: We didn't have a specific plan for bridge collapse when the I35W bridge came down, and we did a damn good job.*

¹⁴⁰ More information about CAER groups in Minnesota is on page 185.

- *The whole hazmat world is now focused on oil instead of other hazmat. There are other hazardous materials that may catch people's attention. I hope there is not legislation requiring a separate response or program for everything.*
- *My hope is that the training that the state is doing to increase preparedness for an oil incident will be valuable from an all-hazards perspective.*

Legislative changes

Several interviewees **urged against making any significant changes** to programs or statutes until the current changes are allowed to take effect. **Examples of comments:**

- *There should be careful consideration of all the risks and the whole situation before there's a reactionary change in the law.*
- *After fire departments have received the training, the state will be in a better position to assess whether or not departments are adequately prepared.*
- *Let this new legislation play out—we'll never be able to get ahead if it keeps changing. Wait until the next study in 2017, and then look at potential legislation.*
- *We can't keep reacting to things. Let's step back and look in a year see where we are. Then we can start looking at legislation. One possibility would be to look at hazmat in general instead of just oil.*

A few interviewees indicated that the **requirements for preparedness** that apply to rail companies **should be expanded to pipelines.**

Fiscal changes

Interviewees provided opinions about fiscal changes need to enhance public safety preparedness for an oil transportation incident.

Most interviewees' recommendations were connected to the **need for training across the state:** resources to make it easier for local responders to attend training and exercises, resources to offset the costs of running simulations and drills, resources to expand the limited number of available trainers in state agencies, and **resources to sustain the training program over time** (including providing refresher training and updated training as needed to address changes in tactics or materials).

Other fiscal recommendations focused on the need for additional staffing and other resources for **additional preparedness and prevention efforts in agencies** such as Health, MPCA, and MnDOT.

A few interviewees emphasized that rail and pipeline companies should be held financially accountable for prevention and preparedness efforts.

Another recommendation is to **establish separate funds for training and equipment**—pots of money that could be used to increase capacity.

As discussed on page 133, a few interviewees recommended changes to CAT team funding.

A few interviewees recommended caution and prudence in expanding funding for oil transportation safety:

- *The way that everything was earmarked makes sense at this point. Give it a little time to see what happens with the curriculum and see if that is that money well spent. Then, look to whether we need additional ERTs or more employees or other resources.*
- *Once we get past the study and initial training, we should look at funding equipment and training beyond awareness. If some location along the track is more risky—derailment areas, for example—maybe we should station equipment there. Then we should look at the next step of training.*
- *It would be a waste of state money to provide things like proximity suits and foam applicants to fire departments. An exception is Minneapolis and St. Paul—the other fire departments are just not going to be able to respond.*

Public education and awareness

Several state interviewees described the importance of increased public education and awareness or a “whole community”¹⁴¹ approach.

- *Guide the public on expectations. The public awareness piece is big. People need to know if something happens, this is what we’re telling people to do. We need PSAs, something to tell people about preparedness and response.*
- *We need to educate communities about possible risks, about the potential need for an evacuation; they need to be sure that an emergency plan is in place in the event of an incident.*
- *We need to clearly explain to people that the best response is to let it [the oil tanker] burn.*
- *Continue community awareness training, like with city councils—especially for planning zone awareness.*

One interviewee described the importance of state agency coordination on public and responder awareness: *If we’re saying the same things from the same place, people will hear it.*

Cautions learned from other preparedness efforts

A few state interviewees urged caution in making changes to programs, policies, or resource distribution based on current concerns about oil transportation, often referencing lessons learned from preparedness efforts after the September 11, 2001 terrorist attacks:

- *There was money coming down [from the federal government] after a catastrophe—boatloads of money. People were buying stuff and doing training, but now we have commodities expiring on a shelf, and the training hasn’t been refreshed. And we still have unprepared communities.*
- *It’s been a curse after 9/11—people are buying equipment they don’t need.*
- *Big changes in training requirements sometimes create a market, with private individuals, companies, and schools offering training. Local governments pay for this training—sometimes this is funded through state or federal grants. There is not always a connection between these investments and outcomes for communities.*

¹⁴¹ In recent years, FEMA and other homeland security and emergency management experts have emphasized the importance of a whole community approach to preparedness and response: governments at federal, tribal, state and local levels, faith-based groups, non-profit groups, private sector industries, families and individuals are all important.

Other recommendations

Many state interviewees offered recommendations and ideas related to oil transportation that are not directly related to public safety incident preparedness. Often, interviewees emphasized that **the best approach to oil transportation safety is to enhance prevention** so that incident response is not necessary.

Examples of prevention actions described by interviewees:¹⁴²

- Use better tanker cars for rail transportation of oil, including sturdier structures and better-engineered valves.
- Improve tracks so that there is less likelihood of an accident.
- Move trains more slowly so there is less likelihood of an accident.
- Reroute rail lines away from populated areas.
- Stabilize oil before shipment.
- Consider location of rail and pipeline in city planning and zoning discussions.
- Take proactive steps to stop spills—such as installing anchor points for containment equipment on storm sewer outfalls.
- Allow railroads to have rail police (law enforcement officials who are employees of the rail company). It is difficult for local responders to police the whole line, and rail police could identify and respond quickly to security or other incidents.

Another recommendation is to plan for the long-term healthcare needs of residents and first responders after an incident, including systems for tracking people who have been affected.

First responders and Local Government Associations

MAD interviewed emergency responder and local government association representatives for their thoughts and beliefs about Minnesota’s preparedness. The emergency responder associations represent the perspectives of firefighters, local law enforcement personnel and emergency managers. The local government associations represent the perspectives of counties, cities and townships. Most of those we interviewed have served in an emergency response role.

General perspectives

Most of the associations directed their comments at the transportation of crude oil via railcar. An example comment:

- *Pipelines have always been a part of our preparedness. They have their own training on location and how to respond. All of our county and city plans have pipeline procedures in place. The railroad is new and evolving.*

Some commented on the recent Bakken oil rail incidents and how they have focused more attention on this issue. An example comment:

¹⁴² Interviewees noted that some of these actions are already underway. Other actions were described as being advisable, but challenging to implement.

- *Ultimately the reason Bakken is getting this attention is because of those 2 high-profile incidents.*

Some of the interviewees perceive pipelines to be safer since they are located underground and in general, are less prone to incidents. One association representative stated to the contrary, “A pipeline disaster would be way worse” because there is a potential for a high volume of product to be released before the flow is shut off.

All of the association representatives believe that not enough is currently known about the risks and appropriate response actions to respond effectively to an oil transportation incident. Many talked about the current all-hazards response planning framework as a foundation for an effective response, but when it comes to the transportation of shale oil from the Bakken fields, there are many unknowns. Some examples of the unknowns are incident locations, appropriate response protocols, location and type of resources necessary to respond. An example comment:

- *... Bakken oil is unique, and no one realized this initially. It's more volatile than normal crude oil (it's more like gasoline than other oil). So that needs to be taken into account.*

Preparedness and response capacity

Minnesota's response framework

Many of the responder associations mentioned components of the MN response framework, including emergency response plans, Minnesota Incident Management System (MIMS), MN C-FLOP, CAT, and ERT resources across the state and the frequent communication between the state and local response groups. **Most of the response associations commented that the current framework addresses all hazards including crude oil.** Many of the responder associations were very articulate about this point. As examples:

- *... the state has a number of great resources already in place.*
- *My main point is that the ship is not broken—we may need to look at it carefully, but we do not need to reinvent anything.*
- *We don't need an oil hazmat response team. CAT teams are already trained. Maybe get more training on oil response, but we don't need to buy a bunch of new equipment.*

Perceptions of preparedness

MAD asked association representatives to rate the current a level of safety preparedness; the association representative's answers were highly situational.

For some of the associations, they based their level of preparedness on their specific emergency response responsibilities. For example, law enforcement, which is primarily responsible for securing the incident perimeter, rated the level of preparedness as a 3–4 on a scale of 1 to 5 (5 being very prepared).

For those representing firefighter and city perspectives, they qualified their answer based on risk. Many responders put the incidents in risk categories. When considering train cars, those responding based their reply on risk. Many believe the level of preparedness is adequate for an oil leak but the level of preparedness is marginal if one car is on fire; for a larger incident consisting of multiple tank

cars, most of those interviewed rated the level of preparedness as low or very low. An example comment:

- *This isn't like a car crash that we deal with every day all day. I can't recall the last train that went over, and it's rarely a derailment with a fire ball. We've got very little exposure with the type of incidents that are possible with this stuff.*

In the event of a rail fire, a few of the responder associations suggested that the appropriate action may be not to attack the fire but to let it burn out. An example comment:

- *... with some of these oil spills, if there's a fire, the best thing to do is let it burn.*

Most of the interviewees mentioned that the way to prepare for an oil transportation incident is through all-hazards planning, training for oil specific risks, establishing or maintaining collaborative response relationships and having access to appropriate resources.

Examples of comments:

- *There's an assumption that the boots on ground that will respond are aware and prepared. We'll respond, absolutely, but we will respond better if we have the right training and equipment.*
- *There's no magic on this. You look at risk, you train, you drill, and you make adjustments.*

Planning

All of the response and local government associations pointed to planning as an essential element of preparedness. An example comment:

- *We can avoid many things if we can have a good plan, though. Before preparedness comes planning.*

Most local governments have an emergency operation plan that details a location specific response framework including the resources available. A plan typically addresses all hazards, of which, crude oil is one of many. Most of the interviewees mentioned that currently, most plans do not include a specific response plan for oil. Many of the interviewees voiced the need to plan for an oil incident due to the newness and risk associated oil transportation.

Examples of comments:

- *Pipelines have always been a part of our preparedness. They have their own training on location and how to respond. All of our county and city plans have pipeline procedures in place.*
- *The railroad is new and evolving. We are just starting to hone in on the unique threats of the railway transportation.*

Coordination and collaboration

Most associations pointed to mutual aid and other regional response agreements as necessary to prepare for and respond to an oil transportation incident. Agreements clarify roles and responsibilities. When responding to incidents that cross jurisdictions or require additional fire departments, they accelerate deployment of emergency support when necessary. According to those MAD interviewed, **most communities have mutual aid agreements in place with their surrounding communities.**

Many of the associations believe **better coordination of resources is necessary for all responders, public and private, to better understand the type and location of what is available.** A few associations suggested looking into a **regional response management approach.** They believe this approach would more effectively manage regional incident resources resulting in a timely response.

Many of the interviewees mentioned the helpful collaboration of the state Chemical Assessment and Emergency Response Teams. This shared resource provides piece of mind for local responders that the state can assist in a response involving a multitude of hazardous materials.

Another example of resource coordination and sharing is the statewide response network, MnWARN (Minnesota Water/Wastewater Utilities Agency Response Network). MnWARN was created in response to the many natural disasters occurring across the state. Flooding and tornadoes were wreaking havoc with city water and wastewater systems and cities needed assistance and equipment to respond to overflows and the disruption of services. With the leadership of the water/wastewater community and state agencies, a statewide public works joint powers organization was formed to share resources across the state.

Another example of coordination can be found in the southwest metro region of the Twin Cities. Each city within the region has become a subject matter expert in a topic or hazard and they respond accordingly across the area.

Training

Most of the responders stated that in order to be prepared for an incident, there needs to be training opportunities that consist of a tabletop exercise, a functional exercise and a simulation to respond in the field. The **training should be reflective of the local or regional needs rather than a one-size-fits-all solution.** These events would be followed by an in depth evaluation to reinforce what was learned.

Most of the associations identified current training opportunities regarding rail, such as responder conference sessions on Bakken oil, general “how to turn off the valve training” and other out of state training offered by railroad companies. They believe more locally specific training is necessary to be prepared for an oil transportation incident. A few associations mentioned the training offered by pipeline companies.

Many identified the selection and availability of staff as issues that need to be addressed. One of the representatives mentioned that there is a lack of direction regarding who needs to attend training. Also, many of the associations believe that the **difficulty with recruiting and retaining staff at smaller volunteer fire departments poses a problem for preparedness.** Currently, the numbers of volunteer firefighters is down. It becomes **difficult for fire department staff to participate in training activities when they are already short staffed.**

Finally, one association stressed that training needs to happen where an oil incident is most likely going to occur. In other words, response personnel of cities and counties located along a railway or pipeline, should receive oil incident response training.

Resources

Most of the associations believe there are very few departments that have the necessary equipment to **attack an oil fire, but they also believe it is unnecessary for departments to stockpile equipment**. It was pointed out by many that the amount of class B foam, water and other special equipment would not be enough to attack a large oil transportation incident. As stated by a responder association representative,

- *A large oil train fire anywhere in Minnesota would most likely challenge even the largest departments.*

Some of the responder organizations would like to have an inventory of all resources conducted for both public and private organizations. **Many of the associations identified the rail and pipeline companies as having resources, such as equipment and personnel, and emphasized the need to coordinate with local responders to better understand the type and location of the resources**. Also, some associations question if equipment could be transported to an incident in a timely manner. Many responders suggested locating equipment in proximity to railways and/or pipeline and within a distance that would allow for a timely response.

Many of the associations mentioned that the state CAT and ERTs are vital resources for responders and local government. Most responders are not equipped with the knowledge and resources to respond to chemical and hazardous material threats.

Changes underway to enhance preparedness

The association representatives pointed to efforts underway within state government to provide training and leadership. None of the associations identified changes they will be taking to enhance preparedness at this time. One did indicate that once more is known, they will make adjustments.

Evaluating Preparedness Efforts

Many of the associations provided criteria or measures to evaluate preparedness efforts. One of the associations mentioned the difficulty of measuring preventative activities. It is difficult to determine if an incident has been prevented as the result of any one activity.

The following is a comprehensive list of criteria and measures this group of interviewees identified to evaluate the effectiveness of preparedness efforts.

Exercises/drills

- Evaluation or grade based on the success of training exercises
- Number of drills
- After action reviews

Response time

- Getting response time to appropriate level
- Number of personnel on scene within appropriate timeframe

Upgrade & safety of tank cars

- Train speed
- Percentage of shipping containers upgraded

- Timeframe to attain 100% replacement of containers.

Threats and risks

- Classify and quantify train route exposure risks by considering populations and infrastructure.
- Classify and quantify accident or incidents.

Responders

- Provide a list of responder and carrier abilities necessary to handle various classifications of risk.
- The volume of resources, including equipment and people, necessary to respond
- Percentage of response organizations having an emergency response plan that includes; how to contain, evacuate and recover from an incident.
- Number of evacuees receiving care

Oil transportation incidents

- Number of oil tanker cars traveling on the railroad lines
- Number of accidents and/or incidents
- Numbers of injuries and/or loss occurred

Recommendations and Advice

The following recommendations represent all the suggestions and approaches voiced by the association representatives—some of the recommendations are connected more to prevention or recovery than to preparedness and response. The list does not represent a priority order.

Training

- Coordinated training with all responders and other local resources such as hospitals.

Equipment

- A centralized data base providing type and location of all resources

Importance of all-hazards approach

- Address the potential for terrorism with idle unit trains in high risk areas.
- Need a standard operating procedure for oil rail cars
- Cities need to inventory well location(s) and proximity to railways or pipeline to assess the level of risk to drinking water.

Coordination & collaboration

- Ability of local governments and responders to access both rail schedules and contents records
- Consider the efficiencies of county fire departments in comparison to multiple city fire departments.

Public education and awareness

- Educate citizens on the risks associated with oil transportation incidents.

Fiscal changes

- Consider funding strategies that promote coordination activities to efficiently maximize resources.

- Provide funding that allows for a full time emergency manager in every county
- Prioritize key rail & pipeline routes then provide regional resource coverage to meet efficiency targets.
- Fund full time positions to ensure adequate staffing of volunteer fire departments.
- Provide additional funds for all-hazards planning.
- Increase the rail and pipeline fees to cover the cost of additional resources.

Legislative changes

- Require trains to slow down in high risk areas.
- Require stronger tank cars.
- Create a special victims fund.
- Require two sets of heavy freight rail lines.
- Require more frequent rail line inspections in high risk areas.

Other recommendations

- Require new hospitals, schools and other buildings to be built at a safe distance from the railway to decrease the risk to the local population.
- Spearhead effort to get obsolete tracks, cars and pipelines out of service.

Organizations participating in in-depth interviews

Rail and pipeline companies

- BNSF Railway
- BP
- Canadian Pacific Railway
- Enbridge
- Kinder Morgan Cochin
- Koch Companies
- Magellan
- Northern Tier Energy
- NuStar
- Union Pacific Railroad

First responder associations

- Association of Minnesota Emergency Managers
- Minnesota Chiefs of Police Association
- Minnesota Police and Peace Officers Association
- Minnesota Professional Fire Fighters
- Minnesota Sheriffs Association
- Minnesota State Fire Chiefs Association
- Minnesota State Fire Departments Association

Local government associations

- Association of Minnesota Counties

- League of Minnesota Cities
- League of Minnesota Cities Insurance Trust
- Minnesota Association of Townships

State agencies

- Minnesota Department of Health, Office of Emergency Preparedness
- Minnesota Department of Public Safety, Bureau of Criminal Apprehension, Administrative Services, Minnesota Duty Officer Program
- Minnesota Department of Public Safety, Homeland Security and Emergency Management, Training and Development Branch
- Minnesota Department of Public Safety, Homeland Security and Emergency Management, Homeland Security and Operations Branch.
- Minnesota Department of Public Safety, Homeland Security and Emergency Management, State Teams
- Minnesota Department of Public Safety, Office of Pipeline Safety
- Minnesota Department of Public Safety, State Fire Marshal
- Minnesota Department of Transportation, Office of Freight and Commercial Vehicle Operations, Rail Planning & Program Development
- Minnesota Department of Transportation, Office of Freight and Commercial Vehicle Operations, Transportation Regulations
- Minnesota Pollution Control Agency, Emergency Response Team
- Minnesota Public Utilities Commission

In-depth Interview Questions

Questions for all interviewees

1. What is your job title and role in your organization?
2. What is your organization's responsibility for preparedness or response to an oil transportation incident? Please describe and provide copies of program descriptions, reports, training curricula, and other relevant information.
3. How does your organization share information on incident preparedness with local first responders and relevant state agencies?
4. Describe coordination efforts among local first responders, state agencies, and rail and pipeline companies regarding preparedness for an oil transportation incident. Are these efforts effective? If not, what changes are needed?
5. Describe coordination efforts among first responders, state agencies, rail and pipeline companies, and medical service providers (including hospitals) regarding preparedness for an oil transportation incident. Are these efforts effective? If not, what changes are needed?
6. Briefly describe the training currently provided to first responders in Minnesota regarding oil transportation incidents. In your view, is this training sufficient in terms of scope and content? If not, what changes do you think are necessary?

7. Describe the firefighting and spill recovery equipment available in Minnesota. In your view, is this equipment sufficient in terms of quality, quantity, and location? If not, what changes do you think are necessary?
8. Is your organization planning to make any changes regarding oil transportation preparedness? If so, please describe and explain why you are making these changes.
9. Please rate Minnesota's level of preparedness for an oil transportation incident (1 being not at all prepared, 5 being very prepared).
[Follow up question if the answer is 1, 2, or 3:
 - a. What (if any) legislative or regulatory changes would be necessary to increase preparedness in Minnesota? Please be as specific as possible.]
10. Compared to other *hazardous materials* incidents, how prepared do you think Minnesota is to respond to an oil transportation incident?
11. Considering the changes that are underway in Minnesota regarding rail and pipeline safety, what criteria should be used to evaluate the success of these efforts?
12. Considering the changes that are underway in Minnesota regarding rail and pipeline safety, how should existing or additional funding be allocated to enhance preparedness efforts?

Additional questions for rail & pipeline company representatives

13. What resources are available to respond to an oil transportation incident in Minnesota?
 - a. What type and amount of firefighting and spill recovery equipment and personnel are available?
 - b. Where are these resources located?
 - c. What is the trigger for deploying these resources?
 - d. How quickly can they be onsite?

Please provide a detailed inventory of equipment and personnel, with information about quantity and location of resources.

14. What mutual aid or similar agreements do you have with other organizations to assist in response to an oil transportation incident in Minnesota? Please provide copies.
15. How does your organization engage local and state government agencies in preparedness planning efforts?
16. Does your organization use contractors or employees to respond to incidents? How does your organization evaluate their work, and how often are evaluations conducted? Please provide recent samples of these evaluations
17. Has your organization conducted risk assessments regarding potential incidents in Minnesota? When were these last conducted, and how often are they conducted? Please describe your findings and action plans, and provide copies of reports, plans, and other relevant materials.
18. Please describe your preparedness efforts for worst case discharges, and provide a copy of your current prevention and response plan.

Additional questions for first responder and emergency management associations

Considering the areas of Minnesota that are potentially affected by an oil transportation incident, and giving your best estimates:

What proportions of cities, counties, and tribal governments ...

19. Include oil incident response in their Emergency Operations Plans or Hazard Mitigation Plans?
20. Have available staff and volunteers who are trained in responding to an oil transportation incident?
21. Have sufficient equipment to provide immediate public safety response to an oil transportation incident?
22. Are familiar with available private sector resources available to respond to an oil transportation incident?
23. Have mutual aid agreements that would assist in response to an oil transportation incident?

Final question

24. Is there anything else you'd like to add? Is there other information that we need to complete this study?

Appendix B. Analysis of First Responder Survey

Methodology Overview

The detailed survey methodology is in on page 162.

Sample size: 157

Fieldwork dates: September 29–October 21, 2014

Population: First responders in sheriff’s offices, police departments, fire departments, and emergency management departments in areas that are potentially affected by a rail transportation incident; cities, counties, and tribal governments

Weighting: The data are not weighted

Data collection: Management Analysis & Development (MAD)

Analysis/report: MAD in conjunction with Daves & Associates Research

Sampling: The sample was provided by the Minnesota Department of Public Safety

Sample design: Attempt at a 100% census of the departments selected

Response Rates

The overall response rate is 48%. The response rate ranged from 44% in law enforcement departments to 61% among emergency management departments. It ranged from 35% in southwestern Minnesota (Region 5) to 66% in southeastern Minnesota (Region 1).

Organization type	Recipients	Respondents	Rate
Emergency Management Department	62	38	61%
Fire Department	132	59	45%
Police Department	86	38	44%
Sheriff's Office	50	22	44%
Total	330	157	48%

HSEM Regions	Recipients	Respondents	Rate
Region 1 - Southeast Minnesota	38	25	66%
Region 2 - Northeast Minnesota	43	16	37%
Region 3 - Northwest Minnesota	57	29	51%
Region 4 - West Central Minnesota	76	29	38%
Region 5 - Southwest Minnesota	34	12	35%
Region 6 – Metro	82	46	56%
Total	330	157	48%

Overview of survey analysis

This appendix provides an analysis of data from the first responder survey, including:

- Perceptions of preparedness
- Awareness of rail and pipeline contents
- Familiarity with resources available through the private sector and regional response teams
- Emergency plans and mutual aid agreements
- Training and preparedness exercises
- Equipment and other resources
- Summary of qualitative responses to an open-ended question regarding preparedness
- Analysis of perceptions of preparedness and preparedness activities

A summary of question by question responses for the entire survey is in Appendix C.

When considering differences in responses by type of organization, it is important to consider the different roles that these organizations have in incident response.

Perceptions of preparedness

The survey asked respondents to consider the availability of public and private resources, and then rate their jurisdiction's ability to respond to an oil transportation incident, using a scale of 1 (poor) to 5 (excellent). **None of the 157 first responders rated their area's ability as excellent. The average rating is 2.6** on the 1–5 scale. Nearly half (44%) responded with only a one or two. There were significant differences among organization types: Sheriff's offices rated their ability to respond highest at 3.2; next was police departments at 2.8; emergency managers, 2.5; lowest was fire departments at 2.3. There also were significant differences among regions. Lowest was northeastern Minnesota at 2.1. In ascending order: southwestern, 2.3; northwestern and southeastern, 2.4; west central, 2.5; Twin Cities metropolitan area, 3.1.

The survey also asked first responders to rate their jurisdiction's ability to respond to an oil spill incident compared to other hazardous materials incidents. Overall, the average response was similar: 2.5 on a 1–5 scale where one meant much less prepared, three meant about the same, and five meant much more prepared. However, the pattern of responses for organizational types and for regions was much different. The average rating among the regions was statistically significantly different. They ranged from 2.2 in the southeast, northeast, and southwest; west central, 2.6; Twin Cities region, 2.7; and 2.8 in the northwest region. However, the comparative ratings were not significantly different among organization types. They ranged from a 2.4 for emergency managers to a 3.0 for sheriff's offices; police and fire departments both averaged 2.5.

To summarize, first responders give similar ratings on average when it comes to overall preparedness for oil incidents, given the public and private resources available, and preparedness in relationship to

other hazardous materials.¹⁴³ Those ratings tended to be neutral or relatively poor. To understand why responders gave these lower ratings, it's helpful to understand their attitudes and opinions about their departments' training, access to resources, and understanding of the issues they face in an oil transportation incident.

Awareness and familiarity

Familiarity with contents of trains and pipelines

Generally, first responders are more aware of the contents of pipelines in their areas than the contents of trains. When asked to rate their familiarity with each on a one-to-five scale where one was not familiar and five was very familiar, the mean rating was 2.9 for the contents of trains and 3.6 for the contents of pipelines. More said they were not familiar than familiar with contents of trains, while more said they were familiar than not familiar with the contents of pipelines. The ratings of the two questions are positively correlated, however: **Those who are more familiar with trains are more familiar with pipelines.**

There are only slight differences in awareness of the contents of trains by region, which ranges from 2.5 in the southwest region to 3.2 in west central Minnesota. Those differences are not statistically significant. There also are slight, statistically insignificant differences in awareness of contents of pipelines by region, which ranges from 3.2 in northeastern and southwestern Minnesota to 3.8 in west central Minnesota.

Familiarity with private and regional resources available

The survey also asked about familiarity with resources available, both from the private sector and from regional response teams, to respond to an oil transportation incident. **First responders are more familiar with available resources from regional response teams than they are with available resources from private sector sources.** On the 1–5 familiarity scale, they scored their familiarity on average 2.9 for familiarity with regional response teams, but only 2.5 for private sector resources.

Familiarity with each has a moderate, positive correlation: **Those who know more about private sector resources are more likely to know more about regional response team resources, and vice versa.**

More than half (54%) of first responders surveyed indicated they were not familiar with private sector resources; 19% said they were familiar. Thirty-nine percent said they were not familiar with resources available from regional response teams, while about a third (30%) said they were familiar.

A more complete portrait of familiarity

The four questions on familiarity and awareness are useful because together they can paint a more complete picture of first responder overall familiarity with potential oil incident hazards and resources than individual questions can. Summing the responses to the questions into an overall familiarity index

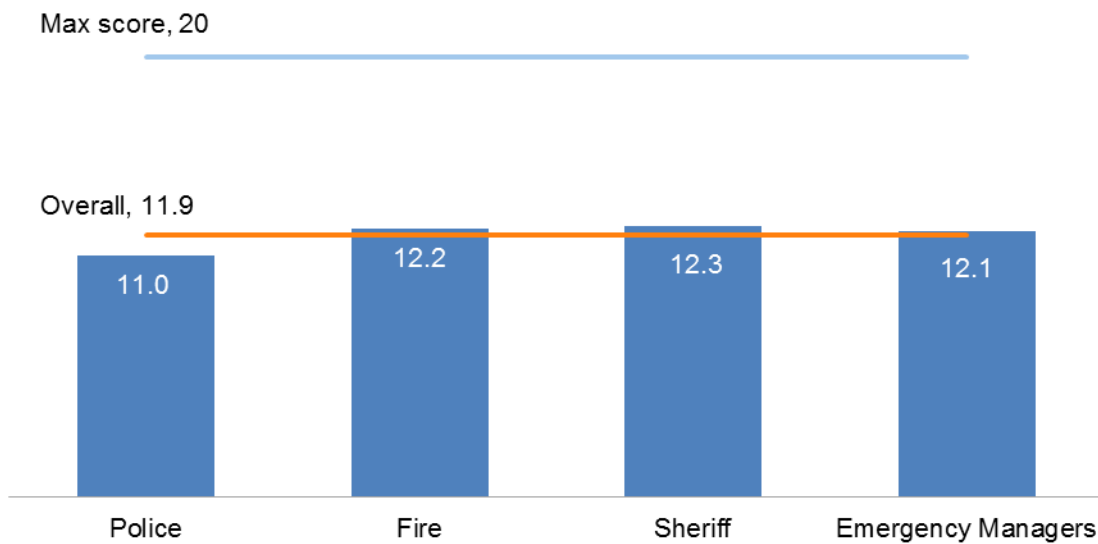
¹⁴³ The correlation between these two questions was statistically significant and quite high. There are two primary possibilities for this correlation: survey respondents may not have seen these questions as distinct; or survey respondents may have concerns about hazardous materials response *generally* that warrant future exploration.

creates a new, broader familiarity measure with a mean of 11.9 and a maximum score of 20 (where survey respondents answered all four of the questions with a 5, meaning they are very aware or familiar).¹⁴⁴ About a quarter of first responders (23%) gave lower responses scored low through nine. Another 38% gave low-to-moderate responses of 10–12. About a third (30%), gave moderate-to-high response. Nine percent gave the highest responses, 16–20.

There were no significant differences in the overall familiarity rating of 11.9 on the scale for different organization types. However, the average familiarity scores differed significantly by region, with first responders in the southwest being less familiar while those in northwest Minnesota and in the Twin Cities regions were more familiar. This familiarity index is used in a later section of this appendix to examine first responder’s perceptions about their ability to respond to oil transportation incidents.

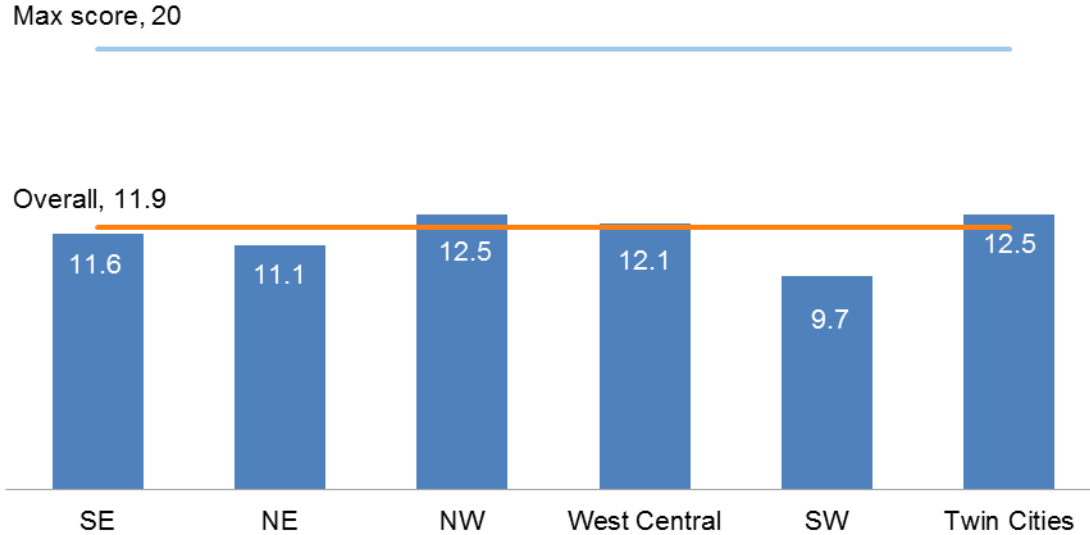
The charts below show the familiarity index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents. The light blue line shows the maximum score for this index.

Figure 13. Familiarity rating scores are similar across organization types



¹⁴⁴ Thirteen respondents are excluded from this analysis because they did not answer or answered “not applicable” to one or more of the four familiarity questions.

Figure 14. Familiarity rating scores differ by regions



Emergency plans and mutual aid agreements

Emergency plans

About two-thirds of the first responder departments (64%) indicated that oil incident response is part of their Emergency Operations Plan, Threat Hazard Identification Risk Assessment (THIRA) or Hazard Mitigation Plan. That ranged from 50% in the northeast region to 78% in the Twin Cities metropolitan area. While that is a wide spread, it is what one might expect by chance; i.e., the differences are not statistically significant. However, there were significantly wider response differences among the types of organizations. Approximately half of fire department first responders (49%) said oil incident response was part of their plans, compared with about three-fourths of other types of organizations, e.g., 77% for sheriff's offices.

Most departments that have oil incident response as part of their plans report that the plans have been updated recently. Thirty-six percent report having updated them less than a year ago, with nearly two thirds (65%) saying their plan was updated less than two years ago. One in ten say their plan is more than five years old. Region is only slightly associated with differences in how recently the plan has been updated, although an examination of update times by geography shows that all of the oldest plans are in the northeastern region, and that the Twin Cities metro is most likely to have the most recently updated plans. Organization type is more telling about plan "freshness:" emergency management departments are much more likely than other departments have updated plans within the past year (55% compared with about a third or less for the other three organization types). Police and fire departments are more likely than others to have older plans.

Mutual aid agreements

Three-quarters of the organizations (75%) report having mutual aid agreements in place that would apply to an oil transportation incident. Survey respondents who indicated that they have mutual aid agreements in place were asked to provide the number of such agreements they have in place: one

(13%) to six or more (12%). Some first responders gave answers such as “county-wide” or “unlimited for state responses.” There was little difference among organization types—about the same percentage reported having agreements. However, organizations in the Twin Cities were more likely (91%) than organizations in southeastern and southwestern Minnesota to report having mutual aid agreements that would apply to an oil transportation incident (67% each).

A large majority (76%) say that mutual aid agreements are sufficient. Organizations in the southwestern region are most likely to report sufficiency (88%), while those in the northeast and west central regions are most likely to report that they are not sufficient (40% and 35%, respectively). Sheriff’s departments are most likely (93%) to report sufficiency, while emergency managers are least likely (63%).

When survey respondents answered that their mutual aid agreements were not sufficient, they were prompted to select from a list of possible changes or to supply their own ideas for changes to mutual aid agreements. Among those who responded (28 survey respondents answered this question), **public/private agreements for sharing resources was selected far more frequently than other options.** Responses were (in order of number of responses):

- Public/private agreements for sharing resources
- More agreements with other non-governmental entities
- Broader scope for agreements
- More agreements with other governments

Training and Exercises

Training

About half of the first responders (52%) said their departments have staff members who have received training in how to respond to an oil transportation incident. Among them about three in five (59%) said the training was sufficient. Among those who have received training, less than half have indicated a quarter or less of their staff had received training, while one in six (17%) said more than three-fourths has received training. About one in eight (13%) said they didn’t know what percentage of their staff has received training.

Those with oil incident response as part of their emergency operations, hazard mitigation plan, or THIRAs are much more likely to report having training than those without plans. Among those with oil incident response as part of their plans, 62% said someone on their staffs had been through oil incident response training, while among those without oil incident response as part of their plans, only 37% had that kind of training. Plus, **those with oil incident response as part of their plans were more likely to have participated in more preparedness exercises,** as well.

The percentage of first responder staffs who had received training is moderately associated with region, i.e., there are differences among the regions. For example, nearly two-thirds of the first responders in the Twin Cities region (65%) indicated that someone on their staff had received training, compared with 25% in the southwest region. There was less of an association by organization type,

where percentage that had received training ranged between 48% for fire departments to 62% for sheriff's offices.

Those first responders in the northeastern region who received training were most likely to report that the training *was not* sufficient (67%) while those in the Twin Cities metro and the southwest regions were most likely to report that they *were* sufficient (67%). There was less variation among the organizations: fire departments were the most likely to say training was not sufficient (54%), compared with sheriff's offices (25%).

Survey respondents who reported that the training they attended was not sufficient were prompted to provide information about what would be needed to make the training sufficient to their area's preparedness efforts. Among those who responded (29 survey respondents answered this question), the most frequent response was advanced training, including training specific to hazards that might be encountered in their jurisdictions. A few mentioned that they needed to do more internal planning, or use past incidents as a planning tool. These 29 responses fall into the following categories (in order of number of responses):

- Advanced training/specific hazard training
- Hands-on exercises
- Additional personnel/other agencies in the jurisdiction trained
- More accessible training
- Use of case histories/past incidents
- Internal planning

Preparedness Exercises

Most organizations report having had no oil transportation incident preparedness exercises since July 1, 2013. Two-thirds (66%) said they had none, while about a quarter (27%) said they had one. Four percent said they had two or more. First responders in the northeast and southwest regions were most likely to report having no exercises (93% and 83%, respectively). Those in the southeast and metro regions were least likely to report having had no exercise (56% and 61%, respectively).

Nine in ten (88%) of those who had exercises reported that they had enhanced the jurisdiction's preparedness efforts. Among the few (5 survey respondents) who reported that exercises had not enhanced their preparedness efforts, suggestions for improvement included: more personnel in the department needed to be trained, more realistic scenarios (not just awareness), more inclusion of incident management, and better exercise facilitators.

A more complete picture of planning, training, and exercises

Planning, training, and exercise are common preparedness activities in the emergency management framework. Combining responses to questions regarding whether an organization includes oil incident response in their plans, whether staff has training related to oil incidents, and whether an organization has been involved in a preparedness exercise related to oil preparedness creates a measure of preparedness activities. This new index ranges from zero (nothing done) to three (having oil incident

response as part of their plan, having at least some trained staff, and having engaged in at least one preparedness exercise since July 1).

Overall, 19% of first responders report doing none of these three things. About a third report having done one of them, and another third (31%) report having done two. Eighteen percent report having all three: plans, training, and exercise. This planning, training, and exercise index is used in a later section of this appendix to examine first responder’s perceptions about their ability to respond to oil transportation incidents.

The charts below show the planning, training, and exercise index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents. The light blue line shows the maximum score for this index.

Figure 15. Sheriffs have a higher planning, training, and exercise index score than other organization types

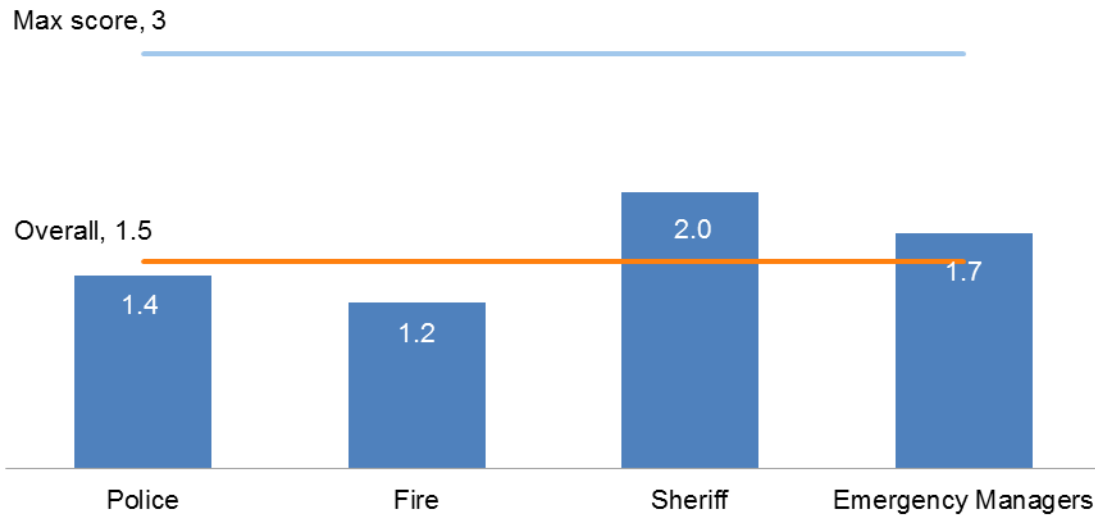
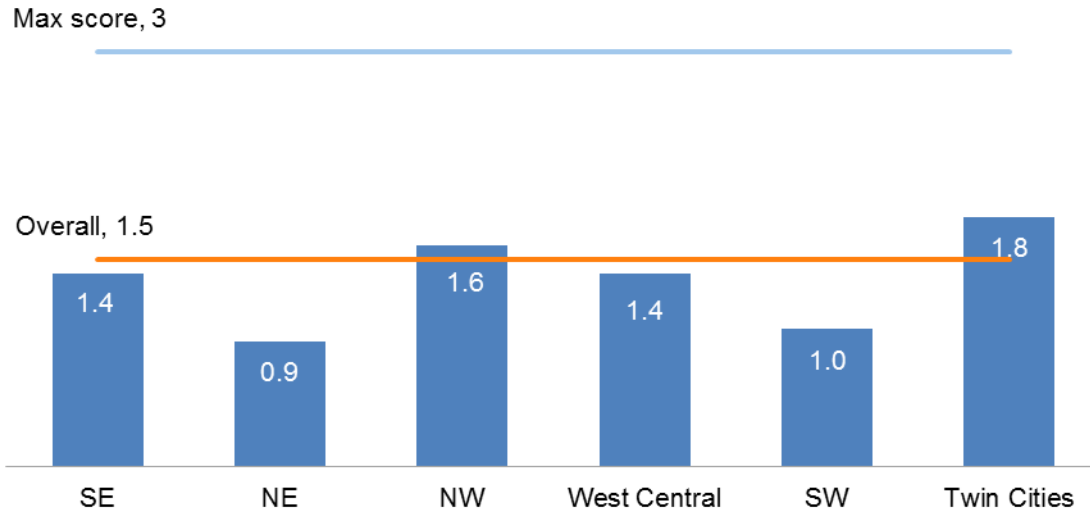


Figure 16. The Twin Cities metropolitan area has the highest planning, training, and exercise index score



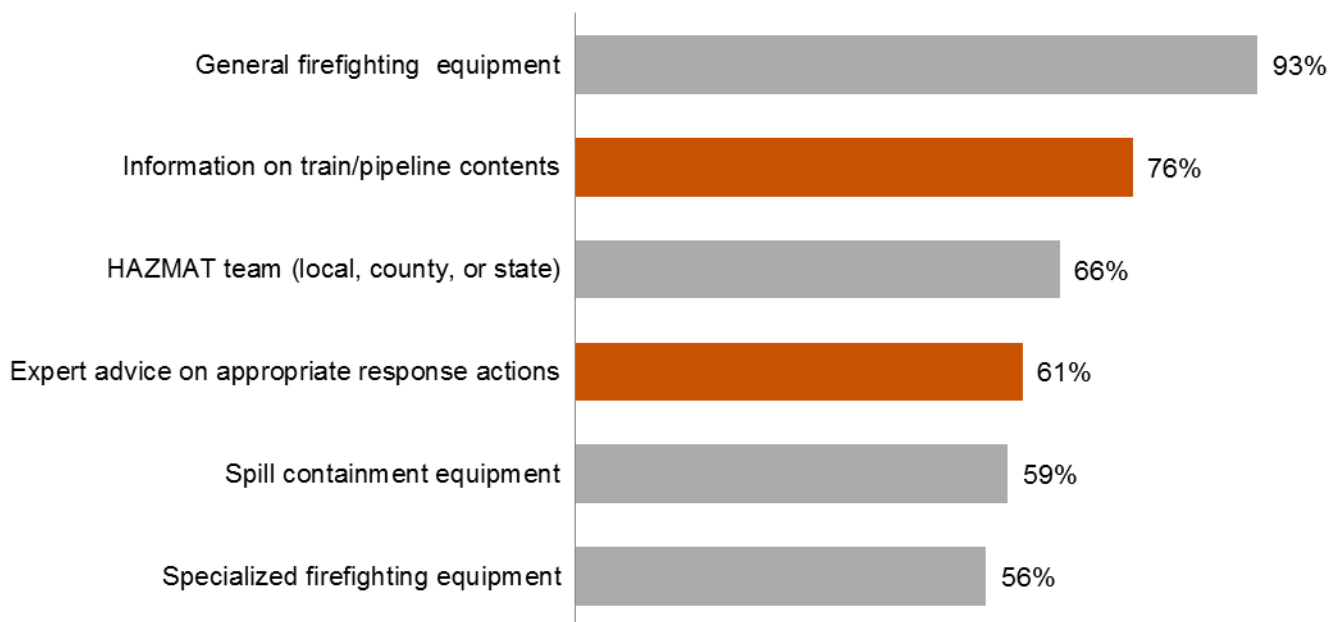
Equipment and other resources

Resources available

Nearly all first responders indicated that general fire equipment was available within 30–60 minutes after an oil spill incident. However, only about half (56%) said that specialized firefighting equipment was available that soon after an incident. About two-thirds said access to a HAZMAT team was available, and 59% said spill containment equipment was available.

While one might expect information resources to be readily available within the 30–60 minute timeframe, about three-quarters (76%) said information about train and pipeline contents was available during that time period, and three in five (61%) said expert advice on appropriate emergency response actions was available.

Figure 17. Some response resources are reportedly available within 30-60 minutes of a spill. Information resources are readily available to the majority of respondents, but not to all.



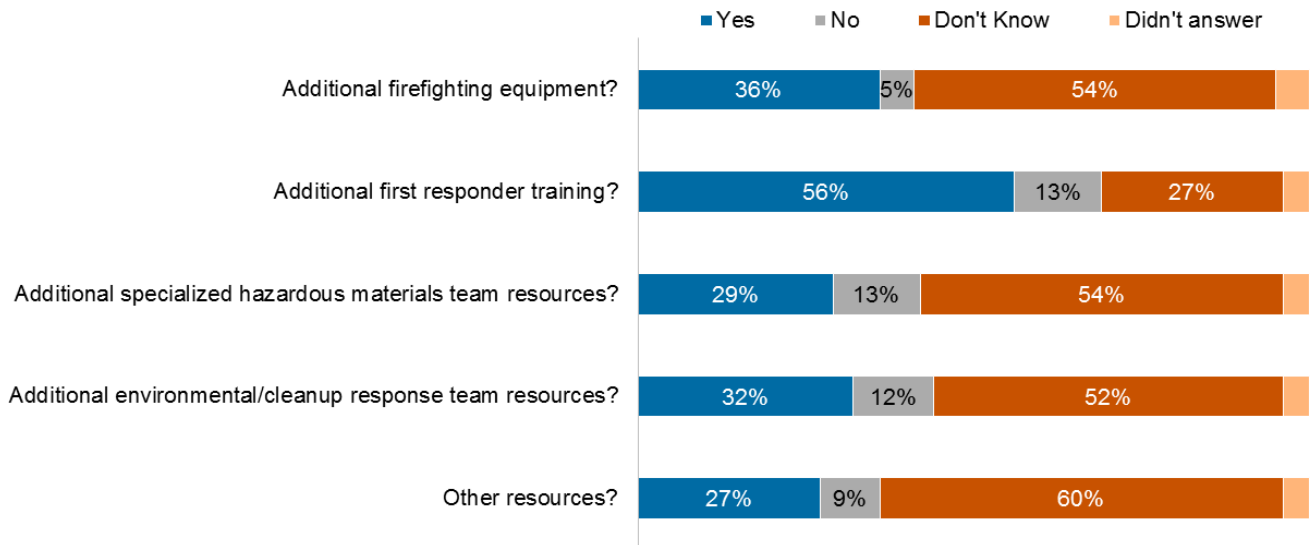
Additional resources needed

The survey asked first responders if additional types of resources were needed for their government to respond to an oil transportation incident.

The majority (56%) of survey respondents indicated that additional training is needed to respond to an oil transportation incident.

Regarding equipment or other resources, **the majority of first responders (ranging from 52% to 60%) said they did not know what additional resources are necessary to respond to an oil transportation incident** (Figure 18). Roughly one-third of respondents indicated that additional resources in these categories are needed: 36% of first responders indicated that additional firefighting equipment is needed to respond to an oil transportation incident. Following that was additional environmental or clean up equipment (32%), specialized hazardous materials team resources (29%), and 27% mentioned some other resources, generally additional training and more equipment, foam for firefighting, and additional funding. (Further discussion of identified resource needs is on page 158.)

Figure 18. Most first responders indicated they do not know what additional resources are needed to respond to an oil transportation incident



Regional and organizational differences in resource needs

Firefighting equipment

The region with the largest percentage of first responders who didn't know if additional firefighting equipment was needed was the southwestern region at 91%. First responders in the northwestern region were most likely to indicate the need for additional firefighting equipment. Emergency management departments (47%) and fire departments (54%) were much more likely to say their government needed additional firefighting equipment than law enforcement departments.

Specialized hazardous materials team resources

Regionally, responses ranged from 18% in the southwestern region who said they needed more HAZMAT resources to 44% in the northwest region. There was little variation among organization types, which ranged from 28% of emergency management departments who indicated the need to 37% of sheriff's offices.

Environmental/cleanup response team resources

There is little difference among the different regions and organization types when it comes to perceptions about the additional response team resources than for other needs. Among the regions, for example, 24% in the Twin Cities region say they need additional such resources, compared with 40% in the southeastern and northeastern regions. Responses among organization types are even more equally distributed, ranging from 29% of firefighters who say their governments need additional environmental or cleanup response team resources, to 37% among police departments.

Other resources

Regionally, responses were quite similar: Between a quarter and a third of all regions indicated they had other needs not covered above. However, among organization types, the responses were quite

wide. Only 13% of police first responders mentioned additional needs, compared with 36% of emergency management departments.

Additional resource and training needs identified by first responders

As discussed above, about one-quarter to one-third of survey respondents indicated that additional resources were needed in different categories. The survey prompted these respondents to provide additional information regarding what resources are needed.

First responder training

Seventy-six survey respondents provided information about additional first responder training that is needed to respond to an oil transportation incident. Specifically, they indicated that they need (in order of number of responses):

- Basic first responder training/incident management
- Rail incident response/advanced training/container content training*
- Oil incident response/advanced training/container content training*
- Hands-on training
- Advanced training (general)
- Law enforcement personnel training
- Evacuation training
- Get all personnel in department trained
- Training on resource availability
- Other
- Don't know

* Some respondents discussed rail training; others discussed oil response training generally.

Firefighting equipment

Fifty survey respondents provided information about additional firefighting equipment needed. Specifically, they indicated that they needed (in order of number of responses):

- Foam/other chemicals
- Additional specialize firefighting equipment
- Containment/absorbent equipment/materials
- Non-specific/general additional equipment
- Other/Don't know what's needed

Specialized hazardous materials team resources

Thirty-six survey respondents provided information about additional specialized hazardous materials team resources needed. Among those who said additional such resources were necessary, specific information includes (in order of number of responses):

- HAZMAT team and equipment
- Chemical Assessment Team
- Cleanup/containment equipment
- Specific/specialized equipment (e.g., foam, PPE, PAPR)

- More training, generally
- Miscellaneous other (e.g., awareness classes, access to fire departments)
- Access to specialists/experts

Environmental/cleanup response team resources

Thirty-five survey respondents provided information about additional environmental/clean-up response team resources. Among those who said additional such resources were necessary, specific information includes (in order of number of responses):

- More knowledge about local resource availability
- Special expertise/equipment
- “Anything”
- Don’t know
- Funding
- Miscellaneous other
- Chemical Assessment Team
- Containment equipment/waste containers

Other resources

Thirty-six survey respondents provided information about other resources needed to respond to an oil transportation incident. Among those who said additional such resources were necessary, specific information includes (in order of number of responses):

- Training and equipment, in general
- Funding
- Foam
- Staffing
- Cleanup/containment equipment
- HAZMAT training and equipment
- Contact with transporters
- Evacuation training
- Hands-on training
- Miscellaneous other
- Don’t know

Differences within regions or organizational types

Given the relatively small number of respondents who provided responses to the questions about what additional resources were needed (and given that not all respondents who said that they needed resources provided an answer to the follow-up question regarding type of resources), analysts were unable to identify meaningful patterns of responses by HSEM region or organization type.

A more complete picture of available resources

The survey asked respondents to identify whether certain categories of resources were available to them locally or through a mutual aid agreement: general firefighting equipment, specialized firefighting equipment, spill containment equipment, and hazardous materials monitoring equipment.

By counting the number of respondents that reported having any of these types of resources, one can create an index ranging from zero (access to none of the resources) to four (access to all).

Five percent of first responders report having access to none; 15%, to one; 20%, to two; and 17% to three. About two in five (43%) report having access to all four. The differences among the organization types are not significant, and scores range from 2.3 to 3.1 around an overall mean of 2.8. However, there is a significantly wider perception of access to resources by region, with first responders in the northwest and southwest regions indicating they have access to fewer resources than those in the Twin Cities region. This resources index is used in a later section of this appendix to examine first responder's perceptions about their ability to respond to oil transportation incidents.

The charts below show the resource availability index for the different organization types and regions represented in the survey data. The orange line shows the overall index score for all survey respondents. The light blue line shows the maximum score for this index.

Figure 19. Assessments of available local or mutual aid resources are relatively similar across organization types

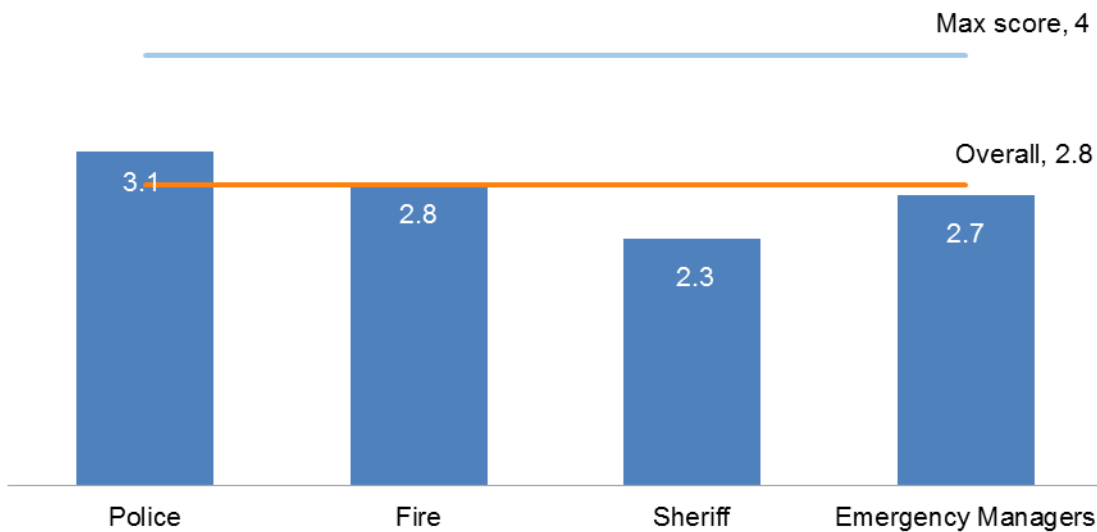
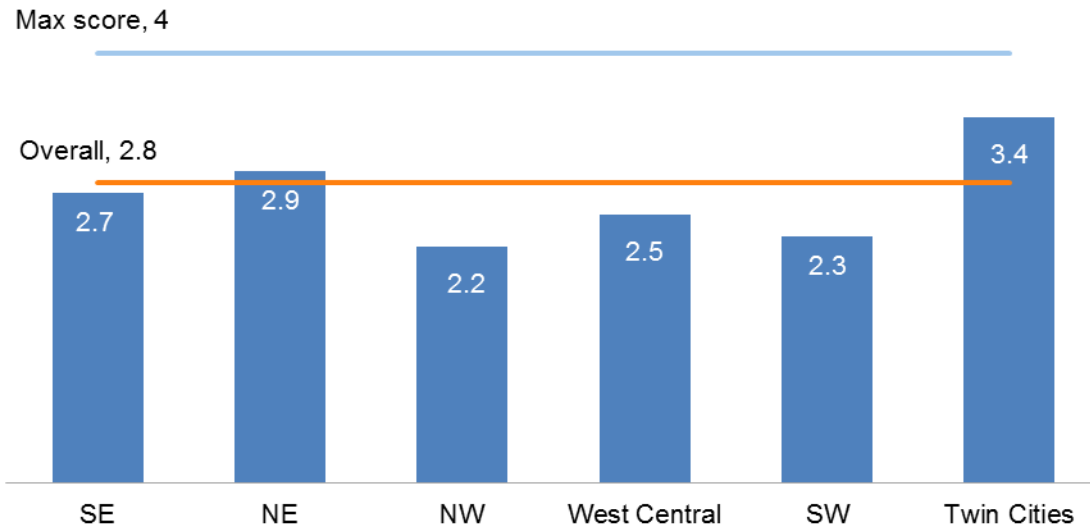


Figure 20. Responders in the Twin Cities metropolitan area report greater local or mutual aid access to identified resources



Additional first responder comments

First responders were given additional space to indicate comments about other issues they wanted to mention. Most (74%) did not list anything. Some who did indicated dire consequences in general. “A train derailment with several cars would be potentially disastrous,” one said. Another cited the potential for an environmental catastrophe. But others generally reiterated what has been covered above—the need for more training and other resources. The comments fell into these categories:

- Unprepared/unable to handle an incident
- Incident would be catastrophic
- Need oil incident training/equipment
- Need law enforcement training/equipment
- Evacuation training/concerns
- Funding at the time of the incident
- General concerns
- Hands-on training
- Rail/pipeline should be responsible for incident cleanups
- Need information about resources available
- Need training on identifying contents of rail cars
- General concerns about oil transportation on roads

Understanding perceptions of preparedness

To better understand survey respondents’ perceptions of their area’s preparedness for an oil transportation incident, analysts used the three indices described above to see what, if anything, predicts higher perceptions of preparedness. Analysts used a statistical technique called multiple linear

regression, with responses to the survey question regarding preparedness for oil transportation incidents as the dependent variable, and the three indices as the independent variables.

The regression analysis found that **all three indices are significant predictors of how well prepared responders report their agency is to respond to an oil incident**. This analysis provides support for a common emergency management perspective: familiarity and awareness; planning, training, and exercise; and resource availability lead to increased perceptions of preparedness.

The planning, training, and exercise index was the most important predictor of high perceptions of preparedness, while availability of resources was the least important predictor.

Conclusions

The survey results provide information regarding Minnesota's capacity to respond to an oil transportation incident and provide insights regarding potential capacity development.

Local responders indicate that they generally have sufficient mutual aid agreements with other governments, but suggest that additional public/private communication is needed (in terms of mutual aid agreements, information about rail and pipeline contents, and familiarity with resources from the private sector).

Local responders generally report including oil transportation incidents in their emergency operations or similar planning.

Some local responder staff and volunteers have received training on oil transportation incident response, but responders desire more training (in terms of quantity, scope, and quality). Likewise, some organizations have been involved in preparedness exercises related to oil transportation; these exercises have typically been viewed as enhancing preparedness efforts.

Some local responders report that they have access to some resources that would help them respond to an oil transportation incident, but many expressed that they do not know what additional resources may be needed.

Several factors were connected with organizations' perceptions of preparedness: when organizations report awareness regarding the contents of railcars and pipelines in their area, when they report familiarity with private and regional resources, when they engage in planning, training, and exercises, and when they had resources available locally or through mutual aid agreement, their perception of preparedness increased. The most significant predictor of a high preparedness perception was a high score on a combined index of planning, training, and exercises.

Methodology Detail

Instrument development

The questionnaire was developed by MAD in consultation with DPS. Prior to distribution, MAD tested the questionnaire with its internal survey team and with DPS.

Sample selection

DPS selected counties and municipalities along rail and pipeline routes that transport oil. The sample of sheriff departments, fire departments, police departments, and emergency managers was selected with the purpose of including those who might have direct knowledge of emergency response plans and overall preparedness in the county, city, or tribal area.

Respondent selection

Survey invitations advised respondents that they were responding on behalf of their organization.

Survey administration and response rates

DPS's commissioner sent an introductory email to all survey recipients, advising them that they were selected to provide information needed for a report to the Minnesota Legislature. MAD's survey software sent all recipients an invitation email and link to the online survey.

To increase response rates, MAD's survey software sent four reminder emails to non-respondents during the course of the survey; the final email indicated that the survey deadline was extended from October 14 to October 20. When MAD received information from its system indicating that a message was not delivered to an email address, MAD obtained a valid address or emailed the recipient directly. DPS staff promoted the survey to recipients informally; for example, DPS staff discussed the survey at the state fire chief's conference.

The survey was administered by MAD using its SNAP survey software system, which records data electronically as questionnaires are completed. The survey was identified to respondents as being conducted by MAD for DPS.

Survey processing (data entry)

Use of a survey software system means that all collected data were entered into the dataset at the time of the interview. Skip patterns were programmed into survey so questions were automatically "skipped" to the appropriate question based on the individual responses being given. Before the data were analyzed, MAD cleaned the data as part of standard quality assurance procedures.

Weighting

The survey results were not weighted.

Precision of estimates

It is customary to describe the precision of estimates made from surveys by a "level of confidence" (or margin of sampling error). The laws of statistics provide those calculations only for a probability (random) sample. As this was a non-random sample with the purpose of collecting information from specific respondents, no margin of sampling error can be calculated.

Data analysis

Daves & Associates Research conducted the analysis for the survey using SPSS, and drafted this appendix in consultation with MAD.

Appendix C. First Responder Survey

The tables below show the percentages of responses to each question in the online survey of first responders: fire departments, police departments, sheriffs, and emergency managers. The overall number of respondents to the survey was 157. The total number of responses to each question may not be 157—survey respondents were not required to answer each question, and some questions were asked based on responses to preceding questions. These questions are annotated in the summary below.

An analysis of the survey is at Appendix B

Survey questions and responses

On a scale of 1 (not at all familiar) to 5 (very familiar), how familiar are you with the contents of trains in your area?

Response	%
Not at all familiar - 1	5%
2	29%
3	39%
4	20%
Very familiar - 5	3%
Not applicable	3%
Missing	1%

On a scale of 1 (not at all familiar) to 5 (very familiar), how familiar are you with the contents of pipelines in your area?

Response	%
Not at all familiar - 1	3%
2	11%
3	30%
4	33%
Very familiar - 5	20%
Not applicable	2%
Missing	1%

Is oil incident response part of your city/county/tribal government's Emergency Operations Plan, Threat Hazard Identification Risk Assessment (THIRA) or Hazard Mitigation Plan?

Response	%
Yes	64%
No	34%
Missing	2%

When was your plan last updated?

Responses below based on those who say incident response is part of a plan and answered the question.

(n=103)

Response	%
Less than one year ago	36%
1-2 years ago	29%
3-4 years ago	25%
5-7 years ago	8%
More than 7 years ago	2%

Does your city/county/tribal government have mutual aid agreements in place that would apply to an oil transportation incident?

Response	%
Yes	75%
No	23%
Missing	2%

How many agreements do you have in place that apply to an oil transportation incident?

[Open-ended question.]

Responses below based on those who gave an actual number and have agreements in place

Non-numerical text responses are reported separately.

(n=108)

Response	%
None	3%
1	13%
2	21%
3	11%
4	5%
5	8%
6+	12%
Text responses	17%
Don't know	10%

Quantitative responses ranged from one to 27. The median response is 4. The modal response is 2.

Are your current mutual aid agreements sufficient?

Based on those who have agreements and supplied an answer.

(n=115)

Response	%
Yes	76%
No	24%

What changes are needed? Check all that apply.

Percentages are based on those who have agreements, say they are not sufficient, and supplied an answer.

(n=28)

Response	%
More agreements with other governments	32%
More agreements with other entities (other than governments)	57%
Broader scope of agreements	54%
Public/private agreements for resource sharing with the local/county/state Hazmat team	89%
Other	0%

Does your city/county/tribal government have available staff or volunteers that have received training in responding to an oil transportation incident?

Response	%
Yes	52%
No	46%
Missing	2%

What percentage have received training since July 1, 2013?

Percentage based on those who supplied an answer.

(n= 81)

Response	%
0-25%	47%
26-50%	17%
51-75%	6%
76-100%	17%
We do not know the percentage for our area	13%

Was the training sufficient?

Percentage based on those who supplied an answer.

(n= 80)

Response	%
Yes	59%
No	41%

What else is necessary to make the training sufficient for your city/county/tribal government's preparedness efforts?

Open-ended question for respondents who indicated that training was not sufficient.
(n= 29)

Response	%
Hands-on exercises	28%
Advanced training/training specific to hazards that might be encountered locally	42%
More accessible training	7%
Additional personnel/agencies trained	17%
Use of case histories/past incidents	3%
Internal planning	3%

Does your city/county/tribal government have the following equipment available (either locally or through a mutual aid agreement) to respond to an oil transportation incident?

Respondents were offered a “yes” or “no” option for each category. “Yes” responses are displayed below.

Response	%
General firefighting equipment	95%
Specialized firefighting equipment	59%
Spill containment equipment	58%
Hazardous materials monitoring equipment, such as air monitoring equipment or product ID equipment	66%

How many preparedness exercises regarding an oil transportation incident has your city/county/tribal government participated in since July 1, 2013?

Response	%
None	66%
One	27%
Two	3%
Three or more	1%
Missing	3%

Did the preparedness exercise(s) enhance your city/county/tribal government's preparedness efforts?

Based on those who have participated in an exercise and supplied an answer.

(n=48)

Response	%
Yes	88%
No	12%

If not, what could be done to improve the preparedness exercise(s)?

(Only five responses; verbatim responses below)

- Needs to be more training in the department so more than just a few know what to do or expect
- All we did was awareness of what it is and the problems it will be. We would do a table top or a scale exercise.
- Have more training

- Less of a commercial for how prepared the railroads are and more practical, useful incident management information.
- Better facilitating, with a more knowledgeable [sic] person

On a scale of 1 to 5, how familiar are you with available private sector resources (including resources from rail and pipeline companies) to respond to an oil transportation incident?

Response	%
Not at all familiar - 1	21%
2	33%
3	24%
4	16%
Very familiar - 5	3%
Missing	3%

On a scale of 1 to 5, how familiar are you with available resources from regional response teams to respond to an oil transportation incident?

Response	%
Not at all familiar - 1	10%
2	29%
3	28%
4	19%
Very familiar - 5	11%
Missing	3%

Which of these resources are available to your city/county/tribal government from the public or private sector within a 30-minute to one hour time period? Check all that apply.

Response	%
Information about train or pipeline contents	76%
Expert advice on appropriate emergency response actions	61%
General firefighting equipment	93%
Specialized firefighting equipment	56%
Spill containment equipment	59%
Hazardous materials team (local, county or state)	66%
Other (specify)	2%

Other responses:

- Enbridge has containment equipment regionally, but do not believe it would be deployed within 30-minutes to an hour.
- Specialized law enforcement response groups.
- State resources [sic].

Considering public and private resources available to respond to an oil transportation incident, rate your city/county/tribal government's ability to respond to an oil transportation incident.

Response	%
Poor - 1	13%
2	31%
Moderate - 3	37%
4	16%
Excellent - 5	0%
Missing	3%

Instructions for survey respondents: When answering the next five questions, consider public and private resources in your area.

Is any additional fire fighting equipment necessary for your city/county/tribal government to respond to an oil transportation incident?

Response	%
No	5%
Don't know	54%
Yes	36%
Missing	5%

Please describe the kind and amount of additional fire fighting equipment that is necessary in the space below.

Open ended question for those that answered "yes" to the preceding question. Percentages are based on the number of people who supplied answers.

(n=50)

Response	%
Foam/other chemicals	58%
Additional equipment (general)	2%
Containment/absorbent equipment or materials	8%
Additional equipment (specialized)	24%
Non-specific/don't know responses	8%

Is any additional first responder training necessary for your city/county/tribal government to respond to an oil transportation incident?

Response	%
No	13%
Don't know	27%
Yes	56%
Missing	4%

Please describe the kind and amount of additional first responder training necessary in the space below.

Open-ended question for those that answered “yes” to the preceding question. Percentages are based on the number of people who supplied answers.

(n= 76)

Response	%
Basic first responder training/incident management	24%
Oil incident response/advanced training/container content training*	13%
Rail incident response/advanced training/container content training*	16%
Law enforcement personnel training	7%
Hands-on training	14%
Advanced training (general)	8%
Get all personnel in department trained	4%
Training on resource availability	1%
Evacuation training	7%
Other	5%
Don't know	1%

* Some respondents discussed rail training; others discussed oil response training generally.

Are any additional specialized hazardous materials team resources necessary for your city/county/tribal government to respond to an oil transportation incident?

Response	%
No	13%
Don't know	54%
Yes	29%
Missing	4%

Please describe the kind and amount of additional specialized hazardous materials team resources necessary in the space below.

Open-ended question for those that answered “yes” to the preceding question. Percentages are based on the number of people who supplied answers.

(n= 36)

Response	%
Chemical Assessment Team	14%
Cleanup-containment	14%
HAZMAT	31%
Specific/specialized equipment (eg., foam, PPE, PAPR, wireless video monitoring)	14%
Specialists/experts	5%
More training (general)	11%
Other (awareness classes, more area fire department response)	11%

Are any additional environmental/clean-up response team resources necessary for your city/county/tribal government to respond to an oil transportation incident?

Response	%
No	12%
Don't know	52%
Yes	32%
Missing	4%

Please describe the kind and amount of additional environmental/clean-up response team resources necessary in the space below.

Open ended question for those that answered “yes” to the preceding question. Percentages are based on the number of people who supplied answers.

(n= 35)

Response	%
Anything	14%
CAT	3%
Local resource availability	43%
Funding	6%
Special expertise or equipment	14%
Containment equipment/waste containers	3%
Other/miscellaneous	6%
Don't know	11%

Are there any other resources that your city/county/tribal government needs to respond to an oil transportation incident?

Response	%
No	9%
Don't know	60%
Yes	27%
Missing	4%

Please describe the kind and amount of additional resources in the space below.

Open ended question for those that answered “yes” to the preceding question. Percentages are based on the number of people who supplied answers.

(n= 36)

Response	%
Funding	11%
Training and equipment	33%
Staffing	8%
Cleanup/containment equipment	8%
HAZMAT training and equipment	6%
Foam	11%

Response	%
Contact with transporters	6%
Hands on training	3%
Evacuation training	6%
Other	5%
Don't know	3%

Compared to other hazardous materials incidents, please rate your city/county/tribal government's ability to respond to an oil transportation incident.

Response	%
Much less prepared - 1	16%
2	21%
About the same - 3	53%
4	5%
Much more prepared - 5	1%
Missing	4%

If there is anything else you would like to add about your city/county/tribal government's ability to respond to an oil transportation incident, please do so in the space below.

Open-ended question.

(n=41)

Response	%
Unprepared/unable to handle an incident	3%
Incident would be catastrophic	1%
Need oil incident training/equipment	6%
Need law enforcement training/equipment	1%
Evacuation training/concerns	2%
Funding at time of incident	1%
General concerns	1%
Hands on training	1%
Rail/pipeline should be responsible for incidents	1%
Need resources information	1%
Need contents of rail car training	1%
General truck concerns	1%
Other/miscellaneous	7%
Missing	74%

* Will not sum to 100% because of rounding.

Appendix D. Analysis of Focused Interviews with Elected Officials

Methodology

MAD and DPS developed a list of 51 state and local elected officials for focused interviews; the list included mayors, county board chairs, state representatives, and state senators. The intent of these interviews was to gain the perspective of elected officials in areas of the state that could be affected by an oil transportation incident.

To increase participation in these interviews, DPS Commissioner Dohman sent an email to each official on the interview list, requesting their participation in this study. Interviewers then contacted the elected official (or their assistant) by phone or email. Interviewers made multiple attempts to reach the elected officials over several weeks. Interviewers identified some barriers to participation while attempting to conduct interviews, including the constraints of harvest season, electoral campaigns, and other demands on these officials' time. To allow as much participation as possible, interviewers accepted written responses or responses from a proxy if the identified elected official requested an alternative.

MAD consultants and a researcher from Daves & Associates Research conducted interviews with 31 elected officials from October 7 to October 21, 2014; most interviews were conducted by phone. Interviewers used a structured approach to the interviews, using the same list of six basic questions for each interview, with prompts for clarification if needed. MAD and DPS designed the interview questionnaire to generate focused responses to specific questions relevant to this study, while also allowing the interviewee to identify other pertinent concerns. Questions used are listed at the end of this Appendix (page 180). MAD prepared this analysis in conjunction with Daves & Associates Research.

Readers should be cautious in generalizing the results presented here—this was a non-random, small sample of elected officials in Minnesota.

Overview

Interviewees were forthcoming and apparently candid in their responses. The average interview length was 13 minutes, with in-person interviews (with legislators) taking longer, and phone interviews (primarily with county and city officials) taking less time. Some officials did not answer all of the questions, or indicated that they didn't know.

Interviews were conducted with city, county, and state elected officials from different regions in Minnesota. Response patterns are shown in the tables below (Table 5 and Table 6).

Response patterns by type of official

Official Type	Requests	Interviews	Rate
City	22	13	59%
County	18	10	56%
State	11	8	73%
Total	51	31	61%

Response patterns by HSEM region

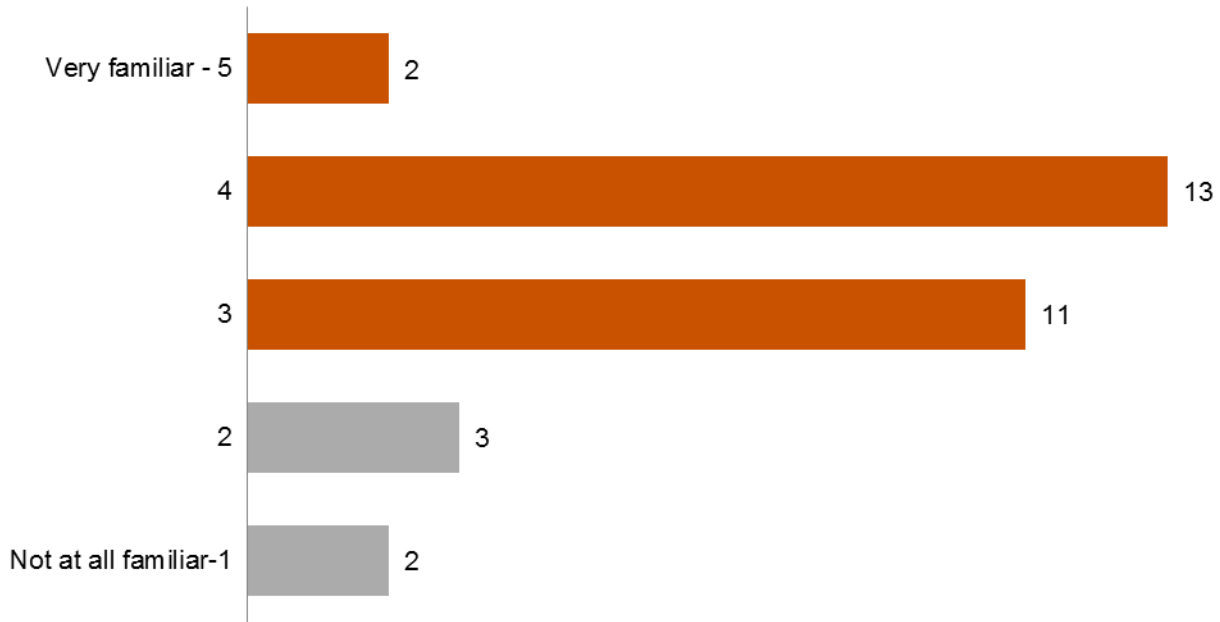
HSEM Regions	Requests	Interviews	Rate
Region 1 – Southeast Minnesota	9	6	67%
Region 2 – Northeast Minnesota	7	6	86%
Region 3 – Northwest Minnesota	7	4	57%
Region 4 - West Central Minnesota	12	6	50%
Region 5 – Southwest Minnesota	4	4	100%
Region 6 – Twin Cities	12	5	42%
Total	51	31	61%

Familiarity with preparedness

Most of the elected officials interviewed for this project indicated that they are neutral or somewhat familiar with public and private response preparedness for an oil transportation incident in their areas. On a 1–5 scale where one was *not at all familiar* and five was *very familiar*, the mean familiarity rating was 3.3. The mean rating was similar for all officials and regions: county officials rated it 3.2; state, 3.3; and city, 3.5. Southeast Minnesota rated it 3.3; northeast Minnesota, 3.5; northwest Minnesota, 3; west central Minnesota, 3; southwest Minnesota, 3.5; and Twin Cities metropolitan area, 3.4.

Two officials said they were not at all familiar with preparedness. “I know very little about this,” one said. But two others said they were very familiar. “I’m very aware of this sort of thing,” one indicated. Some noted that emergency response staff had gone through preparedness training or hazardous materials training. Another commented that “I think we would be fine, but you don’t know until it happens.” Officials who said they were more familiar tended to have public safety backgrounds.

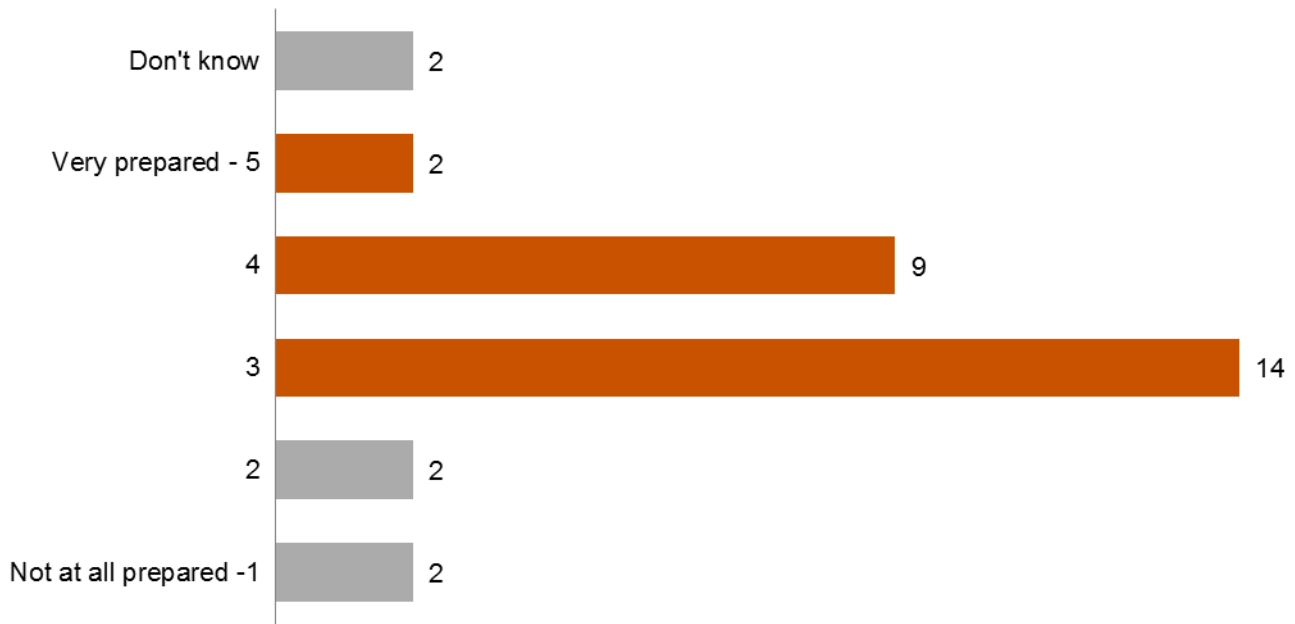
Figure 21. Most interviewed elected officials are neutral or are at least somewhat familiar with preparedness for an oil transportation incident (mean = 3.3)



Perceptions of preparedness

In response to a question about their area’s preparedness for an oil transportation incident, about half of these interviewees gave their city, county, or district a “three” rating, on a scale of one to five, where one is not at all prepared and five is very prepared. Overall, the average rating was 3.2 among those who rated it. Two each said they were not at all prepared (1), or were very prepared (5). The modal response was three. A few said they didn’t know what their preparedness status was. The mean rating was similar for all types of officials: County officials rated it 3.4; city, 3.2; state, 3.0. **Regions 4 and 6 (west central and Twin Cities metropolitan area) rated their perception of preparedness higher than other regions:** the mean for west central Minnesota was 4.3 and Twin Cities metropolitan area was 4.4, compared with means of 3.8, 3, 3, and 2.8 for Regions 1, 2, 3, and 5, respectively.

Figure 22. Most interviewed elected officials are neutral or believe their area is at least somewhat prepared for an oil transportation incident (mean = 3.2)



Responses to questions about preparedness revealed differences in the level of awareness regarding oil transportation. A few officials were unaware of oil being transported in their area, and others indicated that they did not have sufficient knowledge to comment on preparedness in their area. Another indicated that their preparation was “minimal.” “We’re doing the best we can with what we have,” was another comment.

On the other end of that continuum, some officials indicated that they are very aware of the level of risk and of their area’s preparedness. Comments included “We are well aware of the danger. We have oil trains coming through all of the time” and “We have an excellent Emergency Management Director in this county, and we hold monthly meetings [for emergency preparedness generally].”

Resources and changes needed to increase preparedness

Interviewers used open-ended questions to elicit information from elected officials regarding what additional resources or changes may be needed to enhance preparedness efforts. Over half of the interviewees noted the need for at least some kind of change regarding resources, legislation, or regulation.

Generally, **interviewees cited the need for more education and awareness, training, and equipment**, although several officials said they were not conversant enough to provide specific recommendations. An example “We need to have a lot more education and training about this. We probably need a lot more equipment, but I don't know what that would be. I don't think anyone else in this [area] knows either.” Some emphasized the need for coordination and collaboration in order to ensure preparedness.

Others recognized that a significant response need would be communicating with the public if an incident occurs. An example of this sentiment, “Primarily [what is needed] is incident training for oil transportation incidents, where they practice handling a larger population response.”

A few elected officials with public safety backgrounds could be specific about additional categories of resources needed: more containment products, foam, chemicals, and breathing apparatus.

Some officials identified perceived legislative or regulatory changes needed, including the following (note that many of these examples were offered by only one or two interviewees):

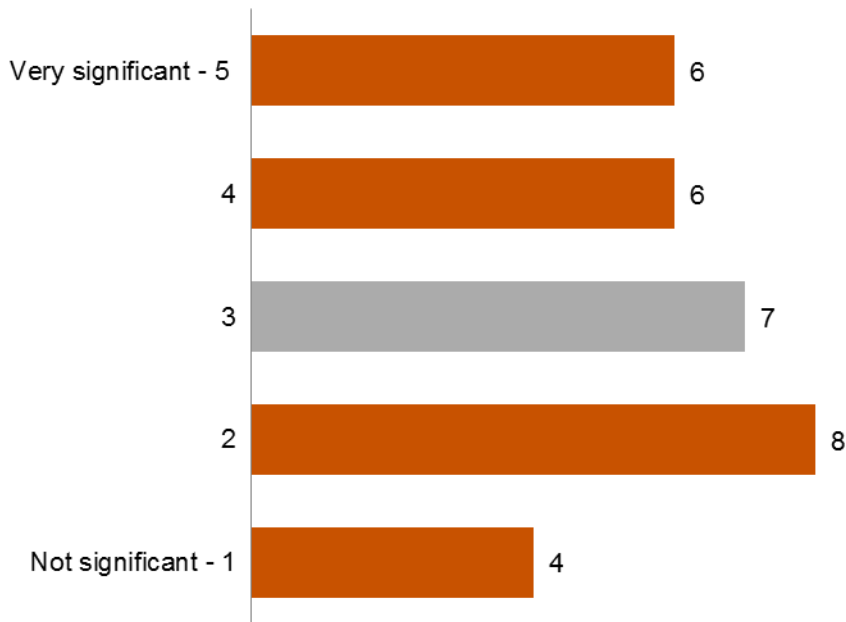
- Make sure the tracks and rail tank cars are capable of handling this kind of cargo.
- Require the trains to slow down as they come through populated areas; make trains shorter so that there is less product and less obstruction to emergency vehicles.
- Make it easier and quicker to install oil pipelines because they are perceived to be safer than rail—though some noted that this would not completely solve the problem.
- Establish additional emergency response teams, particularly in northeastern Minnesota; establish additional caches of response equipment and supplies.
- Ensure that rail and pipeline companies are held responsible for incidents and incident preparedness, such as a having companies pay for necessary training and equipment.
- Increase funding from the state to support local police and fire departments; the local tax base cannot support the additional resources needed.
- Eliminate liability as a potential repercussion for first responders.
- Promote the use of the fusion center to collect and disseminate information about security threats related to rail.
- Increase rail inspections; consider using video monitoring in remote areas.
- Evaluate the ramifications and benefits of allowing rail police to act as law enforcement officers.
- Require community awareness information regarding rail and pipeline contents.
- Establish mandated incident response times, particularly for pipeline companies.
- Establish requirements for specific training for first responders, particularly firefighters.

It is notable that many of these suggestions are geared towards *preventing* an incident rather than responding to an incident.

Perceptions of relative risk

Elected officials were asked to consider all of the risks, threats, and vulnerabilities facing their area and to rate the relative risk of an oil transportation incident. On a scale of 1 to 5 (with one being the risk of an oil incident is *not very significant compared to other risks* and 5 being the risk is *very significant compared to other risks*), these elected officials gave it an average rating of 3.1. Twelve rated it as less significant (a one or two) while another twelve rated it as more significant (a four or five). Although different types of officials gave different ratings, the differences are not meaningful, given the small sample sizes: County officials rated it 2.7; city, 2.9; state, 3.9. **Officials in the Twin Cities (Region 6) rate the risk as higher than other parts of the state:** the Twin Cities metropolitan area’s mean rating was 4.6, compared to southeast Minnesota, 2.7; northeast Minnesota, 2.3; northwest Minnesota, 3.3, west central Minnesota, 2.8 and southwest Minnesota, 3.

Figure 23. Interviewed elected officials have a range of opinions regarding the relative risk of an oil transportation incident, but most are not neutral (mean = 3.1)

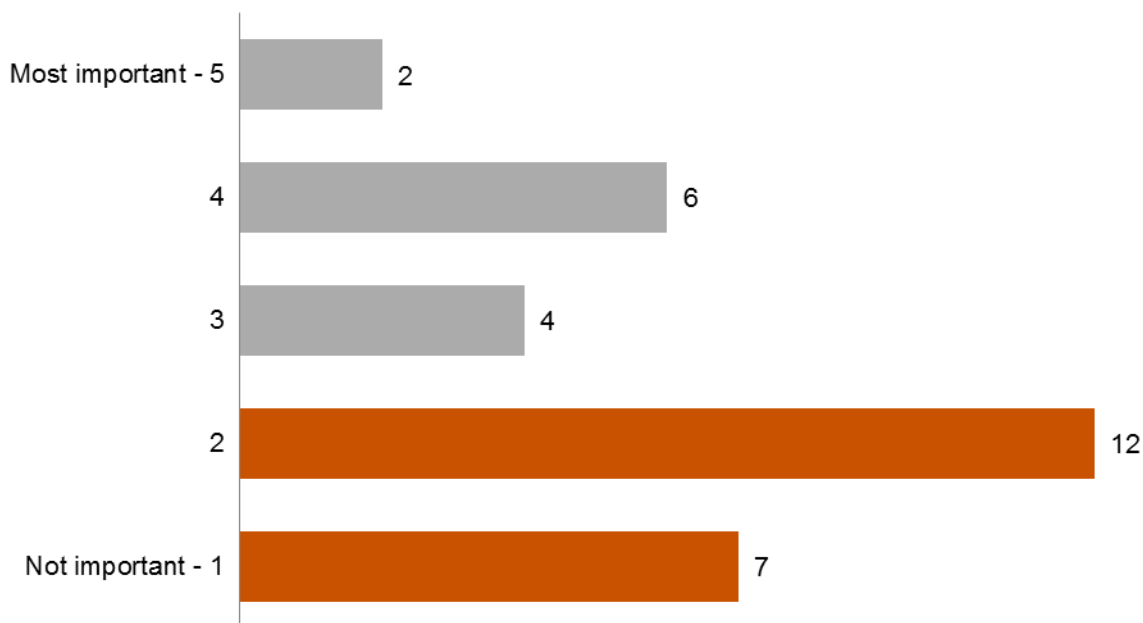


Some officials who rated the relative risk as low indicated that they believed there was a greater risk of natural disasters, such as floods, tornados and forest fires in their area. Making a counterpoint, another official who rated the risk highly said that he didn't worry too much about floods—people know how to deal with floods, he suggested—but that he was not sure what would happen in a large train derailment. One official, who rated the risk a three, indicated that the severity of a single incident can trump the rarity of that type of incident. Some who had the highest perception of risk described potentially catastrophic environmental or public safety impacts if there were an oil transportation incident. As examples: “A spill in the river would be a disaster” and “Very volatile crude oil is going right by people’s homes ... in these crappy tin cans. I think it’s not a matter of if, but when something happens.”

Constituents’ concern about preparedness for oil transportation incidents

Interviewees were asked to consider their constituents’ relative concern about preparedness for oil transportation incidents. These elected officials give an average of 2.5 on a 1–5 scale, where one means they do not think their constituents think that preparedness is important compared with other issues, and five means that it is the most important issue. Officials from all three types of jurisdictions rated their constituents’ importance levels similarly: County officials gave it an average of 2.1; state, 2.6; and city, 2.7. **Officials in southwest Minnesota (Region 5) reported the lowest level of concern among constituents:** southwest Minnesota’s mean rating was 1.3, compared with Southeast Minnesota, 2.5; Northeast Minnesota, 2.5, Northwest Minnesota, 3.3; West central Minnesota, 2.2; and Twin Cities metropolitan area, 3.2.

Figure 24. Most interviewed elected officials believe their constituents do not view oil transportation preparedness as an important issue, among other issues in their communities (mean = 2.5)



There are several possible explanations for the relatively low ratings regarding perceived concern among constituents. One official said he heard about trains all the time from constituents, and while an oil incident may be in the back of their minds, they were vocally concerned about the congestion long trains caused. Another said a local nuclear facility is a much bigger concern in their area. Others cited competing issues such as jobs, schools, and transportation in general. An official who rated constituent concern as a two said that he hasn't heard this concern expressed often, even after the incident at Casselton, North Dakota. A few other officials noted the relative lack of awareness about oil transportation in their communities. Others said that concern is rising, especially in areas that are close to rail or pipelines; some noted that peoples' concern tends to increase when they learn more about the volume of oil and the risks.

Conclusions

Overall, these elected officials indicated a moderate familiarity with and knowledge about oil being transported through their communities, and the risks related to that transportation. Some were less cognizant of the risks or their communities' level of preparedness. Others, especially those with public safety backgrounds, were more knowledgeable about the issues related to oil transportation. Overall, elected officials rated their constituents' concerns about oil transportation incidents as relatively low, in part because it was less salient than other issues or that constituents' awareness was lower, they thought.

Some officials suggested that legislative and regulatory changes were needed to provide more safety and better emergency preparedness. These changes ranged from approval of more pipelines, which

some believe to be safer than rail transport of oil, to requirements for and fund of specific training and education of emergency responders.

While these findings are useful in showing how elected officials see the issues dealing with response to oil spill incidents, the reader should keep in mind that the sample of officials was constructed with the purpose of including as many elected officials as possible within a limited time frame. It does not include all elected officials in those in areas where oil is being transported by rail or pipeline areas because not all were included in the original sample, and because some officials were not available for interview.

Focused Interview Questions

1. On a scale of 1 to 5 (1 being not at all familiar, 5 being very familiar), please rate your familiarity with public and private response preparedness for an oil transportation incident in your area. An incident may involve rail or pipeline oil transportation.
2. Considering available public and private response capacity, briefly describe your [if mayor: "city's;" if board chair: "county's;" if legislator: "district's"] preparedness for an oil transportation incident.
3. On a scale of 1 to 5 (1 being not at all prepared, 5 being very prepared), how prepared is your city/county/district for an oil transportation incident?
If your answer is 1, 2, or 3, please answer these additional questions:
 - a. What additional resources would be necessary to increase preparedness in your area? Please be as specific as possible.
 - b. What (if any) legislative or regulatory changes would be necessary to increase preparedness in your area? Please be as specific as possible.
4. Considering all of the risks, threats, and vulnerabilities facing your [city/county/district], how would you rate the relative risk of an oil transportation incident? Use a scale of 1 to 5 (1 being *the risk of an oil incident is not very significant compared to other risks* and 5 being *the risk of an oil incident is very significant compared to other risks*)
5. Among all the issues facing your community, where do you think *your constituents* rank their concern about preparedness for an oil transportation incident? Use a scale of 1 to 5 (1 being *it's not an important issue compared to others* and 5 being *it's the most important issue*. [Prompt if needed: When you think about your constituents' list of concerns, where is their concern about oil transportation on that list—bottom, middle, top?]
6. Is there anything else you'd like to add?

Appendix E. Resource List

The list below was used to create the map in Figure 3 on page 59. Readers are urged to use caution in using this list for anything beyond interpreting the map. Resource classifications and locations are based on MADs interpretation of information available at the time of this report. The information provided by rail and pipeline companies was not designed for aggregation or categorization. A description of categories is below in Table 8.

Resources in Minnesota—Private Sector Resources and Regional Hazmat Teams

State	City (may be approximate)	Private Sector Resource or Hazmat Regional Response Team	Category
MN	Alexandria	Private Sector Resource	Heavy equipment
MN	Balaton	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Bemidji	Private Sector Resource	Heavy equipment
MN	Bemidji	Private Sector Resource	Spill recovery equipment
MN	Bemidji	Private Sector Resource	Response trailer(s)
MN	Big Lake	Private Sector Resource	Heavy equipment
MN	Big Lake	Private Sector Resource	Response trailer(s)
MN	Big Lake	Private Sector Resource	Spill recovery equipment
MN	Blaine/North Metro	Hazmat Regional Response Team	Chemical Assessment Team
MN	Cannon Falls	Private Sector Resource	Heavy equipment
MN	Cannon Falls	Private Sector Resource	Spill recovery equipment
MN	Clearbrook	Private Sector Resource	Heavy equipment
MN	Clearbrook	Private Sector Resource	Spill recovery equipment
MN	Clearbrook	Private Sector Resource	Response trailer(s)
MN	Columbia Heights	Private Sector Resource	Heavy equipment
MN	Cook	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Duluth	Private Sector Resource	CAER/Coop Group Cache
MN	Duluth	Private Sector Resource	Heavy equipment
MN	Duluth	Private Sector Resource	Spill recovery equipment
MN	Duluth	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Duluth	Private Sector Resource	Response trailer(s)
MN	Duluth	Hazmat Regional Response Team	Chemical Assessment Team
MN	Eveleth	Private Sector Resource	Heavy equipment
MN	Eveleth	Private Sector Resource	Spill recovery equipment
MN	Faribault	Private Sector Resource	Response trailer(s)
MN	Forest Lake	Private Sector Resource	Heavy equipment
MN	Fosston	Private Sector Resource	Spill recovery equipment
MN	Fosston	Private Sector Resource	Response trailer(s)
MN	Fridley	Private Sector Resource	Heavy equipment
MN	Fridley	Private Sector Resource	Spill recovery equipment
MN	Grand Rapids	Hazmat Regional Response Team	Chemical Assessment Team
MN	Hopkins	Hazmat Regional Response Team	Chemical Assessment Team
MN	International Falls	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Lake City	Private Sector Resource	CAER/Coop Group Cache

State	City (may be approximate)	Private Sector Resource or Hazmat Regional Response Team	Category
MN	Mankato	Hazmat Regional Response Team	Chemical Assessment Team
MN	Maple Grove	Private Sector Resource	Response trailer(s)
MN	Maple Grove	Private Sector Resource	Spill recovery equipment
MN	Maple Plain	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Marshall	Hazmat Regional Response Team	Chemical Assessment Team
MN	Minneapolis	Private Sector Resource	Response trailer(s)
MN	Minneapolis	Private Sector Resource	Heavy equipment
MN	Minneapolis	Private Sector Resource	Spill recovery equipment
MN	Minneapolis	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Moorhead	Hazmat Regional Response Team	Hazmat Regional Response Team
MN	Morris	Private Sector Resource	Spill recovery equipment
MN	Morris	Private Sector Resource	Heavy equipment
MN	Newport	Private Sector Resource	CAER/Coop Group Cache
MN	Red Wing	Private Sector Resource	Response trailer(s)
MN	Red Wing	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Red Wing	Private Sector Resource	Heavy equipment
MN	Red Wing	Private Sector Resource	CAER/Coop Group Cache
MN	Rochester	Hazmat Regional Response Team	Chemical Assessment Team
MN	Rosemount	Private Sector Resource	Heavy equipment
MN	Rosemount	Private Sector Resource	CAER/Coop Group Cache
MN	Roseville	Private Sector Resource	Spill recovery equipment
MN	Roseville	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Roseville	Private Sector Resource	Response trailer(s)
MN	Sauk Centre	Private Sector Resource	Response trailer(s)
MN	Sauk Centre	Private Sector Resource	Spill recovery equipment
MN	Sleepy Eye	Private Sector Resource	Heavy equipment
MN	Solway	Private Sector Resource	Heavy equipment
MN	Solway	Private Sector Resource	Spill recovery equipment
MN	Solway	Private Sector Resource	Response trailer(s)
MN	Solway	Private Sector Resource	Spill response supplies, other supplies and tools
MN	St. Cloud	Hazmat Regional Response Team	Chemical Assessment Team
MN	St. Paul	Private Sector Resource	Heavy equipment
MN	St. Paul	Private Sector Resource	CAER/Coop Group Cache
MN	St. Paul	Private Sector Resource	Response trailer(s)
MN	St. Paul	Private Sector Resource	Spill recovery equipment
MN	St. Paul	Hazmat Regional Response Team	Emergency Response Team
MN	St. Paul Park	Private Sector Resource	Response trailer(s)
MN	St. Paul Park	Private Sector Resource	Heavy equipment
MN	Thief River Falls	Private Sector Resource	Response trailer(s)
MN	Two Harbors	Private Sector Resource	Spill response supplies, other supplies and tools
MN	Virginia	Private Sector Resource	Response trailer(s)
MN	Waseca	Private Sector Resource	Heavy equipment
IA	Des Moines	Private Sector Resource	Response trailer(s)
IA	Iowa City	Private Sector Resource	Heavy equipment
IA	Iowa City	Private Sector Resource	Response trailer(s)

State	City (may be approximate)	Private Sector Resource or Hazmat Regional Response Team	Category
IA	Iowa City	Private Sector Resource	Spill recovery equipment
IA	Kensett	Private Sector Resource	Heavy equipment
IA	Le Mars	Private Sector Resource	Heavy equipment
IA	McGregor	Private Sector Resource	CAER/Coop Group Cache
IA	Milford	Private Sector Resource	Heavy equipment
IA	Orange City	Private Sector Resource	Heavy equipment
IA	Rock Rapids	Private Sector Resource	Heavy equipment
MB	Selkirk	Private Sector Resource	Response trailer(s)
ND	Bismarck	Private Sector Resource	Spill response supplies, other supplies and tools
ND	Bismarck	Private Sector Resource	Response trailer(s)
ND	Fargo	Private Sector Resource	Response trailer(s)
ND	Fargo/Moorhead	Private Sector Resource	Response trailer(s)
ND	Fargo/Moorhead	Private Sector Resource	Spill recovery equipment
ND	Grand Forks	Private Sector Resource	Spill response supplies, other supplies and tools
ND	Grand Forks	Private Sector Resource	Spill recovery equipment
ND	Grand Forks	Private Sector Resource	Heavy equipment
ND	Grand Forks	Private Sector Resource	Response trailer(s)
ND	Mandan	Private Sector Resource	Heavy equipment
ND	Mandan	Private Sector Resource	Spill recovery equipment
ND	Mandan	Private Sector Resource	Spill response supplies, other supplies and tools
ND	Mandan	Private Sector Resource	Response trailer(s)
ND	Minot	Private Sector Resource	Response trailer(s)
ND	Minot	Private Sector Resource	Spill response supplies, other supplies and tools
ND	Wilton	Private Sector Resource	Heavy equipment
ND	Wilton	Private Sector Resource	Response trailer(s)
SD	Mitchell	Private Sector Resource	Response trailer(s)
SD	Sioux City	Private Sector Resource	Response trailer(s)
SD	Sioux City	Private Sector Resource	Spill recovery equipment
SD	Sioux Falls	Private Sector Resource	Heavy equipment
SD	Sioux Falls	Private Sector Resource	Spill recovery equipment
WI	Hudson	Private Sector Resource	Heavy equipment
WI	Ironwood	Private Sector Resource	Heavy equipment
WI	La Crosse	Private Sector Resource	Response trailer(s)
WI	Prescott	Private Sector Resource	CAER/Coop Group Cache
WI	River Falls	Private Sector Resource	CAER/Coop Group Cache
WI	Superior	Private Sector Resource	Spill response supplies, other supplies and tools
WI	Superior	Private Sector Resource	Spill recovery equipment
WI	Superior	Private Sector Resource	Heavy equipment
WI	Superior	Private Sector Resource	Response trailer(s)

Categories for Private Sector Resources

Category	Description
Response trailer(s)	Used in cases where a company specifically described that they have a response, fire, or a decontamination trailer at a site; in one case this also includes a personnel living-quarters trailer.
Heavy equipment	Does not include response trailers or skimmers. Examples include where some companies specifically listed owning or having access to “heavy equipment”, and others where they identified using one or more contractors that are, for example, excavating companies or vehicle transport companies; category also includes instances where a company lists a specific type of equipment, such as a backhoe, bulldozer or dump truck.
Spill recovery equipment	Includes tools and other equipment listed separately and that are obviously spill-response-oriented, but are not included in a list of response trailer items in the company’s inventory. Examples include boom, skimmers, absorbent pads, etc.
Spill response supplies, other supplies and tools	Includes smaller equipment not listed in the spill recovery equipment category, as well as other miscellaneous tools and supplies. Examples miscellaneous hand tools and hardware, buoys, tape, tarps, shovels, ladders, traffic cones, office equipment, etc.

The categories described in Table 8 are based on the best information available at the time of this study. There was not always an obvious standardization in the information provided as to the contents of a “fire trailer” versus a “response trailer,” for example. In some cases a detailed inventory of trailer contents was not provided. Further, for companies that were primarily, or included, a refinery operation, some information provided was vague, boiling down to essentially a statement along the lines of saying that “we have our own firefighting equipment.”

MAD identified to various degrees the types of equipment available from the private sector for a spill incident, and its location. The map and accompanying information this report displays the information we were provided and its location. In many cases equipment reports provided were duplicative or overlapping in the cases where there are both a CAER group and an affiliated private company. MAD made every effort to aggregate information when it appeared to be duplicated (such as references by more than one company to the same contractor in the same city). In most cases the equipment described was obviously primarily for use in spill mitigation and recovery, and not necessarily fire-response-related. Some larger companies and affiliated CAER groups included in their inventories “heavy equipment,” or sometimes more specifically, a ladder truck, a foam nozzle, a fire trailer, etc., for example.

Appendix F. Examples of Other Preparedness Programs

MAD conducted research using online resources and interviews with knowledgeable individuals to gather potentially useful examples of other preparedness programs and activities.

Community Awareness and Emergency Response (CAER) Groups

Many interviewees for this study mentioned relationships their organizations maintain with Community Awareness and Emergency Response (CAER) teams within the state. Two CAER teams were identified—Red Wing CAER and Wakota CAER.¹⁴⁵ A similar organization, the Western Lake Superior Port Area Committee, is based in Duluth. Some interviewees also mentioned the national Transportation CAER (TRANSCAER)¹⁴⁶ group and Minnesota Pipeline CAER Association.¹⁴⁷ Many of the individuals MAD interviewed represent organizations that are members of one or more of these groups, including the national and local rail, pipeline and other private companies, first responders, and state and local public sector organizations.

CAER Group Organizations and Roles

MAD interviewed representatives of two Minnesota CAER groups—Red Wing CAER and Wakota CAER—and MAD reviewed available information from online resources.¹⁴⁸

Minnesota's CAER organizations are regionally-specific public and private-sector organizations that have agreements, both formal and informal, among themselves intended to facilitate preparation for and responses to emergencies. They conduct training, coordinate resources and personnel, create response plans, share information, and coordinate and engage in other myriad tasks related to emergency response preparedness. Their focus is on preparation to protect the environment in the case of a hazardous material spill.

These groups have a formal membership process that includes an application, dues and elected positions of responsibilities, and adherence to legally binding standards, such as a constitution or bylaws. Both groups are non-profit organizations, although both include among their membership

¹⁴⁵ Wakota CAER takes its name from the combination of Washington and Dakota Counties. It is also known as the Mississippi River Spill Response Cooperative.

¹⁴⁶ TRANSCAER "TRANSCAER–Hazardous Material Training" Accessed December 10, 2014, <http://www.transcaer.com>.

¹⁴⁷ Minnesota Pipeline CAER Association. "Minnesota Pipeline Awareness." <http://mncaer.com/home/>

¹⁴⁸ City of Red Wing. "Council approves City's participation in Community Awareness and Emergency Response (CAER)" Accessed December 10, 2014, <http://www.red-wing.org/news/press-releases/council-approves-citys-participation-in-community-awareness-and-emergency-response-caer.html>. Also, Wakota CAER "Wakota CAER: Community Awareness and Emergency Response in Washington and Dakota Counties." Accessed December 10, 2014, <http://www.wakotacaer.org/>.

many for-profit private companies. Members include 3M, ADM, BP Pipelines, Canadian Pacific and Burlington Northern Railways, the Minnesota Pollution Control Agency, Metropolitan Council Environmental Services, Holiday Companies, XCEL Energy, Wilson Oil, various local fire and police departments, and a number of other private and public sector organizations, as well as the USCG.

Wakota CAER operates in an area along the Mississippi River stretching from the Twin Cities area to Prescott, Wisconsin, as well as along a portion of the St. Croix River.¹⁴⁹ Red Wing CAER operates along the Mississippi River from Lock and Dam #3 to Lake City and the city of Red Wing.¹⁵⁰

CAER groups' roles are primarily to coordinate the efforts, resources, and capabilities within a region in preparation for a response for an incident. They coordinate response preparation efforts among public and private organizations with responsibilities for hazardous materials transportation and production, and with public sector emergency responders. CAER groups also engage in training exercises, drills, information sharing and community awareness campaigns surrounding emergency response preparedness.

TRANSCAER

TRANSCAER® is national organization with regional and state affiliates that, "... focuses on assisting communities to prepare for and respond to a possible hazardous material transportation incident. TRANSCAER members may consist of volunteer representatives from the chemical manufacturing, transportation, distribution, hazardous material storage and handling, emergency response and preparedness, and related service industries as well as the government."¹⁵¹ MAD did not directly speak with anyone representing TRANSCAER in a formal capacity, although one interviewee noted his position as a TRANSCAER representative within the Minnesota Region (Region 3). Based on a review of the Minnesota region's state coordinators available on the TRANSCAER website, members are a mix of public and private-sector representatives.¹⁵²

Minnesota Pipeline CAER (MNCAER)

MNCAER is an association representing a number of pipeline companies in the state. It provides public safety information to emergency officials statewide regarding their members' operations, as well as training and other safety-related information. According to a booklet shared with MAD by an interviewee:

Minnesota Pipeline CAER serves to collectively provide pipeline safety information to Minnesota emergency officials, including local fire, law enforcement and others through the enhanced awareness of pipeline emergencies, member resources available to a pipeline emergency and a sharing of emergency response capabilities. In addition,

¹⁴⁹ Ibid.

¹⁵⁰ City of Red Wing. "Council approves City's participation in CAER."

¹⁵¹ TRANSCAER "TRANSCAER-Hazardous Material Training"

¹⁵² TRANSCAER "TRANSCAER - Region 3 Hazardous Material Training" Accessed December 10, 2014, <http://www.transcaer.com/regional.aspx?ID=3>.

CAER pipeline and distribution operators and members jointly support efforts to increase awareness of pipeline damage prevention to excavators and public officials.¹⁵³

The booklet includes information for 33 pipeline companies operating in Minnesota, as well as some Minnesota cities and state agencies.

Opinions on CAER Groups

Few interviewees for this project referred to working with TRANSCAER groups, but some did refer to or recommend the model of the two state-level CAER groups. Some offered constructive criticism.

Comments involving CAER groups include:

- *One very successful way of sharing information and resources is a CAER group. Companies and local public safety agencies and state agencies come together for spill prevention, preparedness, and information sharing. It's a national model. Here in Minnesota we have the Wakota CAER, which is Washington and Dakota Counties. Wakota CAER has been a national leader at times, but it comes and goes in terms of effectiveness and level of activity. Sometimes the DNR is involved, occasionally HSEM.*
- *We participate in TRANSCAER, a system-wide community outreach program to improve planning and response for the transportation of hazardous materials. We sponsor and assist in drills with Wakota CAER, Red Wing CAER, and other local community groups to complete*
- *CAER was the creation of local industry recognizing a common need in various communities. The area took a combined resources approach for incident response preparation. It sort of evolved over time ...My advice – be patient. It takes a few years to build the network, the trust, and even get legal agreements in place. It took us a year or two to get fully organized.*
- *The CAER group would respond immediately to a big spill or fire, bring all their expertise and resources, but basically they would just be doing their best until the big guys showed up (railroad companies).*
- *Getting CAER groups to stick has been a struggle. They're never long-lived and they are hard to establish – mostly because of a lack leadership from industry.*
- *There's a smaller CAER group in Red Wing, but that's really local coordination.*
- *Pipeline companies talk about TRANSCAER – that's a national thing. Some states have very active groups. In Minnesota, it's a mechanism to provide awareness training. They could be doing a lot more on that.*
- *Training is taken very seriously. CAER training has generally been mostly about pipelines. Not really much about crude and rail, until recently. It's a new focus.*
- *Wakota CAER is an equipment coop. Any company can grab the equipment. There are 12–13 caches. A weak point – they can't share people yet. So, it's not a complete mutual aid arrangement, it's an equipment coop.*

¹⁵³ Minnesota Pipeline CAER, “2014 Pipeline Emergency Response Planning Information.” Accessed December 12, 2014 <http://mncaer.com/home/>.

Minnesota's Regional Review Committees

Information from interviewees and research on Minnesota's legal framework indicated that coordination efforts related to hazardous materials is also occurring in the state's Regional Review Committees.

HSEM coordinates Regional Review Committees (RRCs) through its Emergency Planning and Community Right-to-Know Act (EPCRA) program. The committees' primary role is to review local emergency operations plans for communities in their regions to ensure that local plans include information required under state and federal law relating to *facilities* that store hazardous materials.

HSEM provides guidance to the committees, such as an orientation manual and plan review guidance.

There are six RRCs in Minnesota, corresponding to HSEM's planning regions. RRCs each have nine members; three each from emergency response organizations, regulated facilities, and members of the public. Members must live and work in the area they represent.¹⁵⁴

Members can request reimbursement for their time (\$55 per day) and expenses under state law regarding administrative boards and commissions.¹⁵⁵

Minnesota's Radiological Emergency Preparedness Program

Several interviewees consulted for this report spoke highly of preparedness efforts for radiological events. MAD conducted research into this topic to identify information that could be of use in assessing or improving oil transportation preparedness. MAD used information provided by a state program representative to prepare the summary below.¹⁵⁶

Program overview

There are two primary aspects to preparedness for radiological events: onsite and offsite. Onsite preparedness is the responsibility of the facility operator (Xcel Energy in Minnesota) and is regulated by the federal Nuclear Regulatory Commission. Offsite preparedness in Minnesota is coordinated by HSEM's Radiological Emergency Preparedness program (REP) and is regulated by the Federal Emergency Management Agency.

REP is a **no-cost program for state and local governments**—the nuclear facility **operator is assessed for the costs** associated with preparedness activities. HSEM coordinates the program and reimburses local governments for expenses associated with preparedness, including staff time to attend exercises. Equipment necessary for offsite response is generally limited to detection equipment to monitor

¹⁵⁴ DPS, HSEM, "Regional Review Committees Operating Policies and Procedures," January 2013. Accessed December 12, 2014 from <https://dps.mn.gov/divisions/hsem/epcra/Documents/rrc-orientation-manual-1-2013.pdf>

¹⁵⁵ Minnesota Statutes 2014 § 15.0575

¹⁵⁶ In addition to information from the program representative, reference materials included: DPS, HSEM, "Minnesota Radiological Emergency Preparedness (REP) Emergency Worker Handbook" [undated] and Minnesota Department of Public Safety, Division of Homeland Security and Emergency Management, "Radiological Emergency Preparedness Program Fact Sheets," 2014.

exposure to radiation—HSEM coordinates distribution and annual calibration of this equipment to relevant local responders.

The REP program also **develops and distributes information for first responders and emergency managers**, including a pocket guide for emergency workers, fact sheets on various aspects of preparedness and response, and a smartphone application for emergency workers.¹⁵⁷ The REP program recently developed **just-in-time training videos for first responders**, which can be accessed online via QR codes or links. These videos are reportedly particularly useful for responders who do not use radiological equipment often—they can easily refresh their memories on how to read a dosimeter, for example, by watching quick training video.

Emergency classification levels are well defined and promulgated to community members, local governments, first responders, and emergency managers. These range from a low level *notification of unusual event*, to an *alert* (resources are mobilized as a precautionary measure), to a *site area emergency* (response functions are activated), to a *general emergency* (protective actions initiated).

Formal evaluation of offsite preparedness activities are conducted by the federal government and by HSEM. HSEM and FEMA review response plans and performance during exercises and drills. The primary **criteria used to evaluate preparedness are adherence to established plan requirements and response protocols**.

HSEM is the lead state agency for preparedness and response activities; MDH, Agriculture, DHS, MnDOT, and DNR also have roles during an incident, including monitoring air, water, and the food supply and staffing reception centers for evacuees. Coordination among industry representatives and state, local, and federal government officials primarily occurs during training sessions and planning for and conducting preparedness exercises.

Key differences between radiological preparedness and preparedness for other types of emergencies

The REP program utilizes some of the same resources and protocols as other emergency responses (including use of the State Emergency Operations Center), but there are several differences that are relevant to consideration of oil transportation incidents. These differences include:

- Unlike other incidents, the State of Minnesota is in control of the response to a nuclear incident. Local officials will be consulted on and involved with evacuation and response activities, but the ultimate decision-maker is at the state level.
- The REP program is entirely funded by the private sector.
- Unlike hazardous materials transportation incidents, a nuclear facility is stationary, and the zone of potential impact is generally well-defined. This allows for detailed planning for establishing evacuation routes, locating reception and decontamination centers, and staging equipment.

¹⁵⁷ The nuclear facility operator develops and distributes information for the general public, including brochures, emergency preparedness planning guide and calendar, and online materials and a smartphone app.

- An insurance fund to provide emergency financial assistance to people affected by a nuclear incident is in place through American Nuclear Insurers.
- Federal regulations regarding preparedness plans and activities are extremely detailed and comprehensive; federal agents actively monitor onsite and offsite preparedness.

Upper Mississippi River Basin Association

Interviewee and other information gathered during this project indicated that the Upper Mississippi River Basin Association (UMRBA) could be a useful example of coordinated public and private efforts in preparedness and response.

UMBRA is comprised of the five states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. Six federal agencies also participate as advisory members. They are: U.S. Army Corps of Engineers, Department of Agriculture (Natural Resources Conservation Service), Department of Homeland Security (Coast Guard and Federal Emergency Management Agency), Department of the Interior (Fish and Wildlife Service and Geological Survey), Department of Transportation (Maritime Administration), Environmental Protection Agency.

The Association's purpose is to facilitate dialogue and cooperative action regarding water and related land resource issues for the Upper Mississippi River Basin.

UMRBA plays a key role in coordinating the Upper Mississippi River Spills Group (UMRSG), which includes representatives of state and federal agencies involved in spill planning and response on the river. The UMR Spills Group serves as a forum for interagency coordination, acts as a voice for the region's responders on spill-related issues, and hosts training activities. Perhaps most significantly, the Group developed and maintains the Upper Mississippi Spill Response Plan and Resource Manual (UMR Spill Plan), which has been adopted via Memorandum of agreement by the Spills Group's five state and four federal agency members.¹⁵⁸

UMBRA conducts table top exercises and large-scale drills, assists in the development of contingency plans for several metropolitan areas and National Wildlife Refuges in the region, and is currently engaged in a mapping project that will result in geographic information system-based sensitivity atlases for the Region 5 states, and upper Mississippi counties within Iowa and Missouri. The maps will provide responders with more accurate information to base their decisions when responding to an oil incident.

Capacity Development Efforts in Other States

MAD reviewed other states' approaches to state first responder capacity development in the context of oil transportation. Though many states are considering the issue of rail transportation incidents, relatively few have taken recent steps to thoroughly examine their preparedness capacity. The states of Washington, New York, California, and Oregon have assessed their level of crude oil transportation

¹⁵⁸ Upper Mississippi River Basin Association, "2013-17 Strategic Plan," January 2013. Accessed December 13, 2014, <http://www.umbra.org/aboutumbra/umbra-strategic-plan2013-17.pdf>, p. 16

preparedness as it relates to *rail* transportation safety. All of these states are wrestling to understand what it means to be prepared, what approaches would be effective and how to put the necessary resources into place to increase their level of preparedness.

The table below highlights the capacity development recommendations these states have developed to increase their state’s preparedness for an oil-by-rail transportation incident. Recommendations related to prevention, such as recommendations to increase federal regulation and oversight, are excluded from the table below.

Table 5. Other states’ recommendations to improve oil transportation preparedness

Recommendation	California ¹⁵⁹	New York ¹⁶⁰	Washington ¹⁶¹	Oregon ¹⁶²
Provide additional funding for local emergency responders (increase staffing, training, equipment)				
Review and update of local, state and federal emergency operations plans (incorporate elements for responding to crude oil by rail incidents)				
Inventory and populate database of firefighting and spill recovery resources				
Increase emergency response training (drills).				
Timely and complete data to successfully evaluate and regulate the risks from oil by rail transport				
Develop a one-stop web portal that provides access to emergency points of contact, training, grants, and other preparedness resources				
Geographically-tiered equipment network to ensure timely and effective response in underserved areas				

New York

New York is similar to Minnesota in its railway oil transportation. New York, like Minnesota, serves as a conduit for shale oil from the Bakken fields unit trains on their way to coastal refineries. The railways go through highly populated and environmentally sensitive areas. On January 28, 2014, Governor Andrew M. Cuomo issued an Executive Order (EO 125), directing state agencies to immediately conduct a coordinated review of New York’s crude oil incident prevention and response capacity. In April 2014, New York issued a report titled, *Transporting Crude Oil in New York State: A Review of*

¹⁵⁹ State of California, “Oil by Rail Safety in California,” June 10, 2014, Accessed on July 14, 2014,

<http://www.caloes.ca.gov/HazardousMaterials/Pages/Oil-By-Rail.aspx>

¹⁶⁰ State of New York, “Transporting Crude Oil in New York State: A review of Incident Prevention and Response Capacity Status Update,” December 2014, 10-11 Accessed December 12, 2014,

¹⁶¹ State of Washington, “Washington State Marine & Rail Oil Transportation Study Preliminary Findings & Recommendations,” October 1, 2014, Accessed November 15, 2014,

<http://www.ecy.wa.gov/programs/spills/oilmovement/2014marinerailoiltransportstudydraftfindings.pdf>

¹⁶² State of Oregon, “Preliminary Statewide Rail Safety Review,” July 25, 2014, Accessed December 12, 2014, http://www.oregon.gov/gov/docs/transportation/Train_Safety_Report_72514_final.pdf

*Incident Prevention and Response Capacity.*¹⁶³ Since the time of this report, New York has made strides in affecting federal, state, and industry policy. More specifically, New York recommended the following state actions to increase first responder capacity development.

1. The State should partner with federal, local and industry partners to increase the number, frequency, and variety of preparedness training opportunities and drills.

Update:¹⁶⁴ New York State has created an interagency working group to increase training and drill opportunities, working in partnership with federal and local governments and oil production and transportation companies.

2. The State should develop a one-stop web portal that provides access to emergency points of contact, training, grants and other preparedness and response resources.

Update: New York will release the one-stop web portal by January 1, 2015.

3. New York State should partner with federal, industry and local response organizations to develop and deploy a comprehensive, geographically-tiered equipment network to ensure timely and effective response in underserved areas.

Update: New York State is in the process of finalizing a tiered response equipment deployment. New York State will also integrate response system assets and abilities, along with those provided by the railroads, into the standardized spill and fire response planning process being developed by the interagency working group.

4. New York State should develop a comprehensive database of available response equipment to support timely and effective response.

Update: New York State will release the database of available assets when the one-stop web portal is finalized. A map of the state will display assets for each county.

5. New York State should partner with EPA and USCG to expand upon existing environmental and contingency plans and develop Geographic Response Plans for all areas of the state.

Update: EPA has obligated funding to update response plans, USCG has expedited updates. NYSDEC will continue to urge the Comptroller to release the funds for the State portion.

6. New York state should enact legislation to require crude oil producers to provide information on the volume and characteristics of crude oil transiting the state

Update: Federal action through the USDOT May 7, 2014, emergency order addressed the information need for state and local responders.

7. New York State should develop more effective airborne contaminant plume modeling capability to assist first responders.

Update: New York State convened a modeling comparison workshop with a Bakken crude oil scenario on October 20, 2014. State and federal representatives participated in the workshop. A final report will be completed by December 31, 2014.

¹⁶³ State of New York, "Transporting Crude Oil in New York State: A Review of Incident Prevention and Response Capacity." April 30, 2014. Accessed October 3, 2014, <http://www.eli.org/sites/default/files/docs/nyscrudeoilreport.pdf>.

¹⁶⁴Updates are from: "Transporting Crude Oil in New York State: A review of Incident Prevention and Response Capacity Status Update," December 2014, 10-11 Accessed December 12, 2014, <https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/CrudeOilUpdateReport.pdf>