
## Department of Public Safety

# Minnesota's Preparedness for Ethanol and Oil Transportation Incidents

**January 15, 2017**

# Executive Summary

The Minnesota legislature directed the Department of Public Safety (DPS) to produce this report to accomplish the following:

- Update a 2015 DPS study about response preparedness for incidents involving oil transported by rail and pipeline;
- Evaluate training and response preparedness activities;
- Provide new information about preparedness for ethanol rail incidents;
- Examine funding sources, unfunded needs, and equity issues for response preparedness; and
- Make recommendations.

DPS contracted with the state's Management Analysis and Development (MAD) division for this report. MAD drew from a survey of first responders, reference research, and extensive interviews with key public and private sector contacts and stakeholders to compile the information included here.

# Recommendations

DPS will consider and pursue the following recommendations, as appropriate.

## Recommendations for Funds from the Railroad and Pipeline Safety Account

*Exercises and drills:* DPS should offer safety account funding to counties for exercises and drills for rail and pipeline incidents involving oil and other hazardous substances. Safety account funds should be used also to support continued efforts by the DPS Division of Homeland Security and Emergency Management (HSEM) to assist counties with exercise planning and coordination. And HSEM could use safety account funds to produce additional information to help county emergency managers plan and execute exercises. HSEM estimates the cost of support for local exercises at roughly $100,000 per year.

*Support for exercises at Camp Ripley:* If the Minnesota National Guard's Camp Ripley Training Center is expanded to allow for better simulated rail and pipeline incidents, DPS should consider using safety account funds for additional training staff at Camp Ripley, scholarships for training participants, and reimbursements to local fire departments for costs they would incur because of staff participation in exercises there. HSEM estimates costs for these expenditures at roughly $275,000 per year.

*Local planning efforts:* DPS should use safety account funds for local planning grants, including grants for evacuation planning, and to explore risk assessment needs and other potential planning gaps for counties and cities. In addition, HSEM could establish web-based planning information resources. HSEM estimates that roughly $150,000 per year would be needed for evacuation planning grants; no cost estimates are available for the other planning work noted here.

*Community-focused communication and warnings:* DPS should use safety funds for a targeted, preparedness-oriented public awareness campaign about oil and ethanol incidents involving trains and pipelines. In addition, safety account funds should be used to continue improvements for local warning

systems, notably the Integrated Public Alert and Warning System (IPAWS) for counties lacking this now. IPAWS can send out geographically specific emergency information through a variety of channels. HSEM estimates costs at roughly $25,000 for a public awareness campaign and $62,000 for support of local alert and warning systems.

*Classroom training:* HSEM should build from recent extensive training efforts and offer awareness and advanced training in the 10 southern Minnesota counties where ethanol likely moves via rail lines but where participation in this HSEM training has been limited. Additional awareness training sessions beyond these targeted counties may be needed in the future to serve new first responders elsewhere in the state. HSEM should tap existing ethanol training programs and work with the railroads to avoid duplication. MAD estimates that roughly $110,000 to $130,000 would be needed to offer 30 to 35 training sessions in the 10 targeted counties.

## Other Recommendations

*Response equipment availability and gaps:* This report makes no recommendation for local equipment purchases, in part because MAD uncovered little in the way of clear calls for crucial equipment. However, research for this report did reveal a lack of information about major response equipment and its availability for use if a rail or pipeline incident occurs. HSEM should explore ways to work with others to compile information about key response equipment, document availability of the equipment in the event of an incident, and identify gaps, if there are any. Of particular interest is information about the alcohol-resistant foam needed to suppress vapor and fire from an ethanol incident.

*Access to state's ARMER communications system:* DPS should consider providing railroad safety officials with ongoing access to the Allied Radio Matrix for Emergency Response (ARMER) system, the state's primary communications tool for first responders and public safety experts. HSEM should also explore the potential benefits of similar access to the system for pipeline officials.

*Information about hazmat rail car contents:* HSEM should continue to encourage emergency responders to adopt the relatively new AskRail software application from the Association of American Railroads, and also encourage emergency managers to use commodity flow reports from the railroads about the hazardous substances transported through their communities. AskRail is available to qualified emergency personnel and provides real-time information about car contents in the event of an incident, but railroad representatives report relatively limited adoption of this tool.

*HSEM reporting on how Railroad and Pipeline Safety Account funds are spent:* HSEM should make information publicly available about how the state spends funds from the Railroad and Pipeline Safety Account in order to demonstrate the usefulness of that special revenue fund and keep stakeholders updated. At present, some railroad representatives and public sector response officials report concerns about the account, mostly because of uncertainty about how DPS is using the funds.

# Update to 2015 Study of Oil Incident Preparedness

The state appears better prepared for an oil transportation incident involving rail or pipelines than it was when DPS released its 2015 study on "Minnesota's Preparedness for an Oil Transportation Incident." State government organizations, private sector companies, and local governments all have

taken actions to enhance preparedness for oil incidents involving rail and pipelines among first responders, responsible parties, and government agencies.

## DPS Strategy and Progress: Awareness and Operations Training

The 2015 DPS report on oil transportation includes recommendations and intended actions. The DPS implementation strategy for addressing those has focused on increasing the awareness of emergency responders and others to the transportation of Bakken crude oil, educating them about train derailment challenges, and clarifying roles and responsibilities. For this reason, HSEM has conducted awareness and advanced training for first responders, particularly in areas of the state with the potential for oil incidents involving railroads and pipelines.

*Awareness training and effectiveness:* Using funds from the Railroad and Pipeline Safety Account, DPS's HSEM division developed and conducted 279 training sessions from August 2014 through October 2016. A total of 5,844 participants attended the sessions, 82% of them firefighters, 9% law enforcement personnel, 6% emergency managers and public officials, and 3% emergency medical service workers. Participants came from at least 246 of the state's 463 high-priority communities located near railroad tracks and pipelines carrying oil. Aggregated evaluation scores from 4,478 training participants across all the evaluation questions averaged 4.7 on a scale with 1 as the lowest rating and 5 as the highest. Written comments from the participants were overwhelmingly positive.

*Advanced training and effectiveness:* Starting in January 2016, HSEM hired training contractors to offer more detailed, advanced training for emergency responders, again with funds from the Railroad and Pipeline Safety Account. In the 10 months from early January to mid-October 2016, these trainers conducted 41 sessions for 871 participants, 97% of whom were firefighters. Sessions were held in 28 high-priority communities. Advanced training continues. Participants on average rated their satisfaction with the sessions at just above 4 on a scale with 1 as the lowest rating and 5 as the highest. At some of the training sessions, participants were asked to rate gains in their knowledge and ability from where it was before the training to where it was afterward. Results show rather limited gains, ranging from a self-reported 15% gain for the ability to identify the contents of trains and pipelines to a 30% gain for feeling prepared for an incident.

*Did training leave participants better off?* It is difficult to determine if emergency response training leaves participants better off, in part because the only real test is performance during an emergency. This report, however, uses survey results as a useful—but limited and imprecise—gauge. A 2016 survey of fire chiefs, law enforcement officials, and emergency managers found that 63% reported better preparedness with classroom training now than before HSEM offered training. Comparisons of survey results in 2014 and 2016 show that a smaller percentage in 2016 (6%) rated their ability to respond to an oil transportation incident as poor than in 2014 (14%), and a greater percentage in 2016 (22%) rated their ability as very good to excellent than in 2014 (16%).

## Other DPS Efforts

Because DPS focused its preparedness response efforts on training for first responders, it has yet to take action on many of the other recommendations from the 2015 report. Nonetheless, several developments are worth noting. DPS has worked with other state agencies to ensure that information about response

resources is available to emergency response leaders statewide through the federal Homeland Security Information Network. In addition, DPS has strengthened ties with North Dakota and Wisconsin regarding reciprocity arrangements for emergency response. DPS has helped local governments implement IPAWS to ensure communications with those in danger in an emergency. In addition, the agency has provided relevant training to state-sponsored, regional hazmat response teams.

## Updates on the Oil Transportation Incident Response Situation

Other developments since the 2015 report have improved the situation in Minnesota when it comes to response preparedness for potential rail and pipeline incidents involving oil.

*Survey results indicate progress:* Results from surveys of fire chiefs, law enforcement officials, and emergency managers indicate preparedness improvements. As noted previously, a larger share of respondents in 2016 than 2014 rated the ability to respond as high, and a smaller share rated it low. In addition, the percentage of respondents indicating a high level of familiarity with the contents of trains passing through their areas has grown from 24% in 2014 to 45% in 2016. The percentage indicating a high level of familiarity with the contents of pipelines also rose, from 54% in 2014 to 67% in 2016. In addition, respondents to the 2016 survey indicated how their preparedness for an oil transportation incident now compares to preparedness in 2014. More than 60% reported that preparedness in 2016 had improved for the following: classroom training (63%), risk assessment (62%), evacuation planning (61%), and other preparedness planning (69%). More than half also reported improvements for public communications and awareness, coordination and mutual aid, and exercises and drills.

*Governor's Council on Freight Rail:* In July 2016, Governor Dayton established a Council on Freight Rail to elevate coordination and partnership between the State of Minnesota and the railroad companies. The council focuses on rail traffic safety and reduced risks, as well as economic development and community engagement. The council elevates the safety conversations to an actionable level and in this way aims to improve rail incident preparedness.

*Federal rules for high-hazard flammable trains (HHFTs):* Regarding prevention as well as preparedness, federal regulations from 2015 established new rules about train speeds, risk assessment of rail routes, enhanced braking systems, and notification procedures for hazardous materials moving through jurisdictions on long oil trains and other HHFTs. In addition, federal law and regulation now requires that new tank cars for HHFTs meet higher design and safety performance standards.

*Notable private sector developments:* Both pipeline operators and railroad companies have engaged in training that has improved preparedness in Minnesota. Through their cooperative support for Minnesota Pipeline Community Awareness Emergency Response (CAER), pipeline operators fund 25 to 30 training sessions in Minnesota every year, serving 1,100 to 1,200 participants annually. Similarly, the major Class I railroads have trained thousands of first responders in Minnesota to handle rail incidents involving oil and other hazardous substances. Some 4,300 first responders participated in railroad training in Minnesota in 2015 and in 2016 through October. From 2014 through October 2016, Class I railroads funded training for 259 of Minnesota's first responders in crude oil transport by rail at Colorado and Texas training centers. As noted earlier, the railroads and their association also have introduced the AskRail app to increase the real-time information about train car contents.

# Ethanol Preparedness and Response Framework

In its 2015 session, the Minnesota legislature amended its directive for this study to include a focus on ethanol. Crude oil began moving through Minnesota in high volumes only after fracking recently led to an oil boom in nearby North Dakota. But ethanol has been transported by rail in the state for decades. Minnesota's 21 ethanol plants, mostly in southern Minnesota, ferment and distill ethanol from corn, generally. They produce more than 1 billion gallons of ethanol per year, ranking the state fourth for ethanol production and generating significant economic benefits. The plants are located along rail lines, and producers ship ethanol by rail to be mixed with gasoline as a renewable fuel for vehicles.

Like crude oil, ethanol is a Class 3 flammable liquid regularly transported by rail. Compared to Bakken crude oil, ethanol is more uniform in nature, so its characteristics are more predictable, but it also has a lower flashpoint, meaning the temperature at which it produces enough vapor to form a flammable mixture with air. Ethanol mixes with water, making it practically impossible to contain when leaked into water. In addition, it is practically impossible for firefighters to dilute ethanol with water to a point where it will no longer burn. Producers mix their pure ethanol with 2-5% gasoline to denature it before shipment. (The U.S. Environmental Protection Agency (EPA) classifies this denatured ethanol as oil.) As with crude oil, denatured ethanol is usually shipped via unit trains, generally meaning that 20 or more tank cars of ethanol in the train form a continuous block. While dangerous, ethanol is one of many hazards Minnesota must be prepared to handle.

## Preparedness Response, Players, and Roles

MAD's fall 2016 survey of fire chiefs, law enforcement officials, and emergency managers found that most respondents who have or might have ethanol moving through their jurisdictions reported they are as prepared for a potential ethanol transportation incident as for other hazmat transportation incidents (61%), although one-quarter (26%) said they were less prepared. The majority (59%) also reported they are more prepared now for an ethanol rail incident than they were in 2014.

The State of Minnesota has a comprehensive legal framework for emergency preparedness and response, detailed later in this report. Relevant state laws include the Minnesota Emergency Management Act, Minnesota's Spill Bill, and the Hazardous Materials and Incident Response Act. State law covers, among other areas, state agency responsibilities, local government roles in planning and response preparedness, preparedness requirements for railroad companies (and pipeline operators), environmental response and liability, and coordination, mutual aid, and assistance.

Response to an ethanol rail incident involves key players from the private and public sectors. Their roles may be summarized as follows:

***Railroads:*** Under federal rules and regulations, railroads are ultimately responsible for responding to an emergency involving the substances they transport. Class I railroads own or contract for emergency response equipment that they employ in the event of an incident, and they have personnel both in-house and under contract who respond. With an ethanol rail fire or explosion, railroad responders would be charged with controlling and suppressing fire on the tracks, while local firefighters would likely concentrate their efforts on fighting structural fires that might result from the incident.

*Local governments:* Minnesota's local governments are primarily responsible for meeting citizens' immediate health and safety needs when a major emergency occurs, taking action to evacuate areas as needed and providing direct firefighting when called for, particularly if a rail car fire spreads to structures in the community. In all but the most catastrophic incidents, the commander of the local firefighting unit is the incident commander overall.

*State government:* The State of Minnesota participates in emergency hazmat response through its locally based statewide regional hazmat response teams. In addition, state agencies and agency personnel play roles in planning, preparedness, and response. HSEM and the Minnesota Pollution Control Agency (MPCA) in particular are active in incident response, although other agencies may play roles as well. In general, the State of Minnesota and its partners at county and local governments and the railroad companies address concerns about ethanol, and oil, in the context of an all-hazards approach, assessing preparedness for response to all types of potential hazmat incidents.

*Federal government:* The federal government's primary role in preparedness and response to an ethanol rail incident is in regulating the rail industry in ways that impact all phases of emergency management. The EPA and the U.S. Coast Guard may become involved in incident response in cases of hazmat spills and releases. Additionally, federal guidelines and best practice recommendations underpin many state and local response frameworks and preparedness efforts.

# Response Capacity and Needs for Ethanol Incidents

Significant private and public sector resources exist to respond to an ethanol rail incident in Minnesota, including equipment, personnel, and mutual aid arrangements, but also plans and the training resources that build response capacity in the state. MAD compiled capacity inventory information about these resources, to the extent feasible. MAD also explored needs for training and equipment.

*Resources located statewide:* MAD compiled a list of locations for equipment and personnel using information from the 2015 DPS report about preparedness for oil transportation incidents and using updated information about additional resources. The results indicate significant resources for response throughout the state and in nearby locations, although some of the resources applicable to crude oil incidents may be less useful for ethanol ones. Resources in southern Minnesota are of particular interest because ethanol rail traffic primarily moves through that region. Additional resources for response to an ethanol rail incident also may be available from ethanol producers and possibly from some of Minnesota's larger airports.

*Private sector personnel and equipment:* The railroads are required under federal law and regulations to respond to oil and hazardous substance incidents that occur because of rail cars on rail tracks. As a result, the private sector is responsible for most of the major emergency response equipment and equipment staging locations for potential ethanol rail incidents, and it also secures or provides qualified personnel to handle ethanol-by-rail situations. In addition, railroad companies participate in cooperative CAER organizations with spill equipment caches. Representatives of the major Class I railroads in Minnesota report that they have the equipment and personnel needed to respond to an ethanol incident. They are required to provide information to federal regulators about the adequacy of

their response capacity. In the case of ethanol, Minnesota's 21 ethanol production plants constitute another important private sector player involved in emergency preparedness and response.

*Public sector resources through state government:* State agency responders—on call 24/7—provide expert advice to first responders by phone or in person in some cases, and they can deploy state or regional resources to a scene if needed. HSEM and MPCA would be the primary responders from the state for an ethanol rail transportation incident, although the state's Departments of Agriculture, Health, and Transportation, as well as the State Patrol, may also be involved. Personnel with MPCA's Emergency Management Unit respond to environmental releases, including ethanol rail incidents. HSEM funds and coordinates regional hazmat response teams that can assist with rail incidents involving ethanol, as well as the much broader range of hazmat emergencies. Minnesota has 11 of these Chemical Assessment Teams (CATs), with four of the CATS operated by local fire departments that also field larger hazmat Emergency Response Teams (ERTs). CATs and ERTs focus their attention, advice, and assistance on the hazardous substances involved in an ethanol or other hazmat incident, not on fires that may result.

*Local first responders:* Minnesota's 780 local fire departments, with their 20,600 firefighters, constitute an obvious and important resource for response to ethanol rail incidents, as do law enforcement agencies, emergency management offices, and emergency medical services. In terms of personnel, local fire department commanders take charge of incident scenes and firefighters play important roles. In the case of a rail incident, local first responders most often should focus less on rail cars, rail tracks, and ethanol and more on protecting life and property in their communities, through evacuation measures and by fighting the structural fires that might result from the incident. For local fire departments, equipment concerns are less about owning and maintaining specialized equipment for an ethanol rail incident and more about knowing what is available, who will bring it to the scene, and how fast. Where the risk of an incident is higher, as it is for communities near ethanol plants or major rail hubs, some local fire departments may choose to purchase specialized equipment, particularly alcohol-resistant foam for use in vapor and fire suppression.

*Mutual aid:* Results from MAD's fall 2016 survey show that four in five (81%) of the respondents from communities where ethanol might be a concern report mutual aid agreements that would allow the local responders to call upon first responders in nearby jurisdictions for personnel and equipment if needed for an ethanol rail incident. The state makes provisions for mutual aid even in the absence of a formal agreement.

*Plans:* Emergency plans are an important element of the capacity inventory for responding to an ethanol rail incident. Rail companies are required by both the federal government and Minnesota to have emergency response plans, which they structure to apply to all types of potential hazards, not just ethanol or oil. Communities and first-responder divisions engage in a number of planning efforts. The MAD 2016 survey found that 61% of the survey respondents who either have or might have ethanol trains in their area reported that their emergency plans include ethanol incident response.

*Training resources:* Training resources play an important role in expanding Minnesota's response capacity and keeping it up to date. First responders in Minnesota have access to a variety of ethanol training, available from state and federal agencies, railroad companies, ethanol producers and their

national groups, other national associations, and national training centers. Much of the available training is relevant to but broader than ethanol rail incidents. At the state level, HSEM provides or sponsors relevant training, and the Minnesota Board of Firefighter Training and Education (MBFTE) provides reimbursement to fire departments for training fees, if any, and personnel costs incurred as a result of participation by their department staff in the training.

***Training needs:*** Based on survey results and interviews, MAD identified needs for training in ethanol incident preparedness and response. Specifically, those interviewed noted a need for exercises, and survey respondents identified exercises and drills as a high priority for funding. Interviewees repeatedly mentioned both discussion-based tabletop exercises and full-scale exercises, which are resource-intensive, operations-based activities involving multiple entities. MAD's research showed strong interest in exercises and in funding to support them. Classroom training for ethanol rail incidents garnered interest as well, but less so than exercises. For classroom training, interviewees indicated a preference for targeted efforts rather than broad ones, with a focus on areas of the state where ethanol trains travel but where HSEM participation in HSEM oil incident training has been limited. (Some of what is covered in the HSEM oil training relates to ethanol as well.) MAD identified 10 southern Minnesota counties that fit this criteria.

***Equipment needs:*** As with the 2015 DPS study on oil transportation incidents, research for this 2017 study into potential ethanol rail incidents offered little support for significant equipment purchases by fire departments. Instead, as noted earlier, the research pointed to a need among first responder units for more detailed information about nearby specialized incident response equipment, including types, locations, how fast equipment might arrive, and documented information about its availability for use. HSEM officials and firefighters said that while local departments take a lead role in overseeing incident response to ensure public safety, they don't have primary responsibility for putting out tank car fires on rail tracks (railroads do) and wouldn't necessarily have the resources and training needed to do so.

# Unfunded Preparedness Needs: Oil and Ethanol

MAD used a survey and interviews to examine unfunded needs for preparedness activities for rail and pipeline incidents involving oil, ethanol, and other hazardous substances. While some of those interviewed reported no unfunded needs, many noted potential uses for funds. These findings shaped the recommendations above for spending from the Railroad and Pipeline Safety Account.

Leaving aside equipment, which is discussed above, the results from interviews and from both the oil and ethanol questions on the 2016 survey show interest for funding in the following areas:

- Exercises and drills, including discussion-based tabletop exercises and full-scale, operational exercises, but also perhaps operations-based functional exercises and drills. Some of those interviewed said funding is needed to support exercise training at Camp Ripley if the facility is expanded and enhanced to better host rail and pipeline simulations.
- Community preparedness, including evacuation planning, warning systems, risk assessment, and public communications and awareness efforts to better inform and prepare citizens for potential incidents.

- Classroom training, with several of those interviewed calling for classroom training that includes information about the incident command structure.

# Funding Sources and Equity Issues: Oil and Ethanol

Both the private and public sectors fund preparedness activities in Minnesota, sometimes in coordination or partnership but also separately.

## Highlighted State Funding for Rail and Pipeline Incidents

Some state funding is aimed specifically at rail and pipeline risks, while other state preparedness funding supports efforts that are broader but include potential rail and pipeline situations.

*The Railroad and Pipeline Safety Account*: This special revenue account is of particular interest. The legislature established it in 2014 to fund training and response preparedness activities for train and pipeline incidents involving oil or other hazardous substances. The account includes general funds from the State of Minnesota and assessments levied on both pipeline operators and the Class I and Class II railroads in Minnesota. Assessments are scheduled to end by June 30, 2017. DPS projections show that of the $9.074 million that will flow into the account by that date, $2.328 million will have been spent in fiscal years 2015 through 2017, with $6.746 million remaining to be spent in later years. Account funds have been used to cover training costs, reimbursements to fire departments for training-related personnel expenditures, funding for the Moorhead hazmat ERT, MPCA staff costs for responsibilities related to railroad and pipeline response preparedness, and related operational expenses, including the costs of required DPS legislative reports.

*State-sponsored hazmat regional response teams:* Funded by state government and coordinated by HSEM, Minnesota's 11 CATs and its four ERTs (co-located with CATs) can assist with incidents involving oil, ethanol, and other hazardous substances transported by rail and pipeline, as well as a much wider range of hazmat incidents. Regular state funding for CATs and ERTs amounts to $1.185 million annually, over and above the funds from the Railroad and Pipeline Safety Account used for the ERT in Moorhead.

*MPCA's Emergency Management Unit (EMU):* The EMU handles MPCA's preparedness and response efforts for hazardous substance emergencies, only a small portion of which relate to train and pipeline incidents involving oil and ethanol. The unit works on community planning, firefighter training, exercises and drills, response calls, and enforcement. An MPCA official estimated that annual agency costs for all EMU work total roughly $1 million.

*Minnesota Board of Firefighter Training and Education:* DPS' MBFTE makes funds available to fire departments statewide for training that meets quality criteria and also for reimbursements to fire departments for training-related personnel costs. Eligible training includes hazmat courses, some of which would be applicable to rail and pipeline incidents involving oil and ethanol. Most of the funds for MBFTE come from the state's Fire Safety Account (FSA), but MBFTE also uses federal grants and receives funding from the Railroad and Pipeline Safety Account, as noted above. MBFTE has $8 million available from all sources for disbursement in fiscal 2017, with $4.9 million of that coming from a one-time FSA allocation. A more typical fiscal year amount would be $3 million.

*State-administered federal grants:* The U.S. Department of Transportation provides Hazardous Materials Emergency Preparedness grants to states mostly for distribution to local and county governments. Funds are used primarily to prepare emergency responders for hazardous materials incidents. Uses may include activities relevant to rail and pipeline incidents involving oil and ethanol. Minnesota received $410,300 in federal HMEP funding in the grants announced October 2016.

## Private Sector Funding for Preparedness Activities

Railroad and pipeline operators account for a significant share of the funding and response preparedness activities for rail and pipeline incidents involving oil and hazardous substances. Ethanol producers and oil refiners are involved, too, in broader but relevant efforts. In Minnesota, Class I and II railroads and pipeline operators who transport oil have paid assessments into the state's Railroad and Pipeline Safety Account, as noted previously. For the three fiscal years from 2015 through 2017, railroads will have contributed $3.75 million to the account, and pipeline operators will have contributed $3.75 million. In addition, railroad and pipeline operators spend separate funds on their own first-responder training and preparedness activities, including exercises.

The railroad and pipeline companies also pay to ensure personnel and equipment are available for incident response, including their own resources, resources that they contracted for through outside response companies, and resources cooperatively provided through CAERs. MAD was not able to determine or estimate total private sector spending on preparedness activities for potential incidents involving the transport of oil, ethanol, and other hazardous substances by rail and pipeline. Railroad and pipeline operators reported that the complexity of the expenditures prevented them from accurately tallying the costs. This was true as well for ethanol producers and oil refiners.

## Local Funding

Cities and townships commit significant portions of their budgets to public safety, including emergency response and preparedness. However, public safety officials at both the local and state levels reported there is no reasonable way to estimate what share of such expenditures relates to preparedness for incidents involving the transport or hazardous materials, let alone those transported specifically by rail and pipelines. The share is "miniscule," one official said.

## Equity Concerns and Considerations

As part of this report, MAD analyzed equity concerns and considerations regarding funding sources for the Railroad and Pipeline Safety Account, which constitutes the state's major public-private financing partnership. In terms of the railroads, the state only assesses the Class I and Class II railroads. Consequently, none of the 17 Class III and private railroads operating in Minnesota pay assessments into the account, whether they carry oil and ethanol or not. Another equity consideration is that the assessment for the safety account is only levied against railroads and pipelines, although oil and other hazardous substances are transported in Minnesota by trucks. Representatives from the railroads in particular cited this as an unfair imbalance, especially given that rail transportation for hazmat substances is considered safer than truck transport. Public sector officials and others, however, argued that the focus on railroad and pipeline operators is justified for the Railroad and Pipeline Safety Account because rail lines and pipeline move high volumes of oil and hazardous substances and thus constitute the biggest risks for large-scale incidents.

# Closing Comments

The findings and recommendations from this report to the legislature are detailed in the report's main sections and noted in the executive summary. This brief section reiterates several key points by way of review.

Regarding DPS and HSEM work on and Railroad and Pipeline Safety Account funding for response preparedness for rail and pipeline incidents involving oil and ethanol, research conducted for this report found interest in the following:

- Exercises and drills at the county and local level, including discussion-based tabletop exercises and full-scale, operational exercises;
- Community preparedness, including evacuation planning, warning systems, risk assessment, and public communications and awareness efforts to better inform and prepare citizens for potential incidents; and
- Classroom training, particularly for emergency responders in 10 Minnesota counties where ethanol is a concern but where participation in HSEM training on oil incidents involving rail and pipelines has been limited.

This report includes other recommendations that DPS and HSEM plan to pursue, including the following: HSEM should compile information about key response equipment, document the availability of the equipment in the event of an incident, and identify gaps, if there are any—especially for the alcohol-resistant foam needed to suppress vapor and fire from an ethanol incident. DPS should provide railroad safety officials with permanent access to the state's primary communications system tool for first responders units and public sector safety experts, known as ARMER. HSEM should encourage widespread adoption by Minnesota's first responders of the AskRail app that offers real-time information about the contents of hazmat rail cars. And HSEM should make information publicly available about how funds from the Railroad and Pipeline Safety Account are being spent.

The report finds progress in the state when it comes to preparedness for rail and pipeline incidents involving oil, ethanol, and other hazardous substances. Of note are the following:

- Survey results and interviews indicate improvements in Minnesota's preparedness for rail and pipeline incidents involving oil and other hazardous substances. The situation in Minnesota has improved because of efforts by DPS and HSEM, railroad and pipeline operators, new state government initiatives such as the Governor's Freight Rail Council, recent federal action on rail safety, and efforts at the local level.
- Both the public and private sectors are engaged in training that has improved preparedness. HSEM's training efforts around rail and pipeline incidents involving oil and other hazardous substances have reached about 6,000 emergency responders in the state and have had an impact on their preparedness for potential incidents. Training by railroads and pipeline operators has also reached thousands of Minnesotans involved in emergency response and has prepared them better for potential incidents.

Finally, this report makes a number of important points that should and do shape training and preparedness activities for rail and pipeline incidents involving oil, ethanol, and other hazardous substances. These include the following:

- Railroads are responsible for emergencies involving the substances they transport, including oil and ethanol, and consequently they make equipment and personnel available when incidents occur.
- Local fire departments and other first responder units are responsible for meeting citizens' immediate health and safety needs when a major emergency occurs, taking action to evacuate areas as needed and providing direct firefighting when called for, particularly if a rail car fire spreads to structures in the community. They aren't responsible for fires from rail cars on railroad tracks.
- A significant capacity inventory for incident response exists in Minnesota, much of it from the private sector but some from the public sector as well. What the state lacks, however, is clear information for local leaders of public sector emergency response about specific major response equipment and its availability for use if a rail or pipeline incident occurs.
- While ethanol differs from crude oil, the denatured ethanol that Minnesota's ethanol producers ship is classified by the U.S. EPA as oil. Both oil and ethanol are Class 3 flammable liquids. And much but not all of the response capacity relevant for potential oil incidents is relevant for potential ethanol ones. The fact that ethanol mixes completely with water, however, makes it difficult to contain in the case of spills and leaks and makes its fires hard to fight.
- The State of Minnesota and county and local public agencies must address concerns about oil and ethanol in the context of all the hazards, hazardous materials, and potential incidents that could threaten life and property in the state's communities. Incidents involving oil and ethanol transported by rail and pipeline are among the threats, of course, but are not necessarily the most dangerous nor the most common.
- Preparedness and response are important elements of emergency management. However, prevention and mitigation, too, are critical. Prevention and mitigation reduce the threat that hazmat transportation incidents will occur at all and that their impacts will be significant if they do happen. This is particularly important in densely populated urban areas, where an ethanol or oil explosion or fire, for example, would likely have devastating impacts even if preparedness is high and response rapid.