

Establishing MAASTO Emergency Divisible Load Management



TRANSPORTATION
UNDIVIDED



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About the Mid-America Freight Coalition (MAFC)

The industries and farms of the Mid-America region can compete in the marketplace only if their products can move reliably, safely and at reasonable cost to market.

State Departments of Transportation play an important role in providing the infrastructure that facilitates movement of the growing amount of freight. The Mid-America Freight Coalition was created to support the ten states of the Mid America Association of State Transportation Officials (MAASTO) region in their freight planning, freight research needs and in support of regional multi-state collaboration.

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1. INTRODUCTION

Areas impacted by flooding, fires, tornadoes, pandemics, and other crisis require immediate logistics support to return to normal. Delivery of relief supplies to the impacted area is enhanced through the permitting of heavier truckloads of normally divisible loads. In the case where movement of emergency supplies requires transport across multiple states, the delivery of critical relief supplies may be hindered by disparate truck permitting regulations across the states. A unified permitted weight for divisible loads across the ten Mid America Association of State Transportation Officials (MAASTO) states will provide for the seamless and efficient transport of relief supplies. This collaborative project included over twenty-five State Department of Transportation (DOT) engineering and permitting professionals who collaborated to identify an acceptable emergency divisible load (EDL) weight for disasters in the MAASTO region. This unified permitting approach for EDLs provides a significant gain towards better coordination of multistate transportation of critical and often out of dimension loads.

Response to declared disasters is prescribed through two legislative acts. The Robert T. Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”) [1] amended the Disaster Relief Act of 1974 [2]. The acts constitute the statutory authority for most federal disaster response activities as they pertain to the Federal Emergency Management Agency (FEMA) and FEMA programs. The act outlines the procedure for declaration of Emergencies and Major Disasters by the United States (U.S.) President. Section 1511 of the Moving Ahead for Progress in the 21st Century (MAP-21) Act [3] extended the provisions of the Stafford Act in allowing states to issue special EDL permits during declared Major Disasters.

While EDL permitting has aided states’ efforts to mitigate disaster impacts by providing better movement of relief supplies, the recent COVID-19 pandemic has highlighted the need for better EDL coordination within the MAASTO region. The pandemic was the first disaster to impact all states and regions and provides the impetus to address multistate EDL movement. The status quo continues with states issuing and managing EDL permits independently with a lack of coordination, resulting in often conflicting allowances and EDL provisions on multi-state corridors. A MAASTO Emergency Divisible Load Management (EDLM) approach recognizes the multi-state nature of freight loads and the critical needs for emergency supplies in times of disaster, and provides for a uniform regulatory framework in the MAASTO region.

This study is designed to recommend a coordinated EDLM strategy for the MAASTO region that results in a formal agreement to set minimum EDL weight standards across the region. Based on the collaboration and work presented here, the EDLM approach was approved by all MAASTO state executives on October 29, 2021. The approval represents the first harmonized EDLM approach in the U.S.

Project Objective

The objective of this study is to develop an EDLM plan for the MAASTO region that sets minimum weight standards for freight movement of divisible loads within the ten states during presidentially declared major disasters. This unified regional approach provides for the greatest efficiencies in multi-state truck operations, state permitting, and ultimately in the delivery of needed relief supplies. The EDLM plan applies only to federal routes across the MAASTO region except in the case of Indiana which has a historic claim to apply state disasters to the federal system.

This study reviews relevant literature for EDL weight standards, conducts surveys and interviews with personnel in the ten MAASTO states, and develops EDLM scenarios for evaluation. The

generated scenarios were evaluated by representatives from all ten states representing the DOT functional areas of bridges and structures, permitting, and policy. The recommended EDLM strategy was then reviewed by agency legal counsel and approved by the MAASTO Board of Directors (BOD).

Scope of Work

The scope of work for this project is summarized as follows:

- **Establish Project Working Groups (PWGs), review literature and background information:** Given the multidisciplinary nature of the project, the first critical task was to identify team members and request participation from DOT officials who represent the bridge and structures area, as well as personnel from the permitting areas. The bridge and permitting work groups were established and initially worked independently, then combined as a single group for the final scenario evaluations. The PWG was consulted to finalize the scope of work, and identify constraints and opportunities related to developing EDLM strategies. This task was supported with a review of existing literature and relevant work conducted by other states.
- **Outreach and interviews with the PWG to collect necessary information:** The second task involved outreach to the state professionals, focus group project discussions, and surveys of both working groups regarding current EDLM strategies, preferred EDLM practices, and potential regional scenarios.
- **Development of scenarios:** The third task involved developing candidate EDLM scenarios that address the identified needs, goals, and constraints. The scenarios were created with consideration to both individual state perspectives and constraints, as well as the regional perspective to provide the greatest level of efficiency across the entire region. Scenario development also included consideration of the potential pavement and bridge concerns, and impacts to local roads.
- **Evaluate scenarios:** The final task was to evaluate the proposed scenarios, present the supporting data and evaluations, and deliberate with states to identify an acceptable scenario. The concurrence-based EDLM scenario was then presented to the Project Initiation Team for concurrence as the final recommendation. Finally, based on the supporting data and preferred EDLM, a MAASTO Memorandum of Understanding (MOU) was developed for state review and approval.

Organization of the Report

The main body of the report is organized as follows:

- Chapter 2 introduces the Stafford Act and reviews recent declared major disasters in the MAASTO region.
- Chapter 3 presents the survey process and data collection results with the MAASTO state groups.
- Chapter 4 presents the proposed EDLM scenarios.
- Chapter 5 presents an evaluation and analysis of the scenarios considered, as well as results of discussions with the MAASTO states. State preferences and rankings are presented with respect to the candidate scenarios, along with the recommended scenario for the BOD's consideration.

- Chapter 6 presents concluding remarks and provides initiative to further improve freight efficiencies through regional policy and regulation harmonization.
- Appendix A provides the MOU presented to the MAASTO BOD.

2. MAJOR DISASTERS AND THE STAFFORD ACT

Presidential declared major disasters allow increased truck weight limits for divisible loads through two legislative applications. For truck operations, the intention of the legislation is to increase the capacity and speed at which relief supplies can be delivered to an impacted location.

Stafford Act

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (“Stafford Act”) (PL 100-707) [1], which was signed into law in November of 1988, amended the Disaster Relief Act of 1974 [2]. The act constitutes the statutory authority for most Federal disaster response activities as they pertain to FEMA and FEMA programs. The act outlines the procedure for declaration of emergencies and major disasters by the President. State governors from affected states may request a declaration of emergency by the President. Notably, the Stafford Act outlines the criterion for declaring a Major Disaster (a natural catastrophe, fire, flood, or explosion that causes damage of sufficient severity and magnitude to warrant major disaster assistance to the state under the act).

Section 1511 – EDL Permits

Section 1511 of the Moving Ahead for Progress in the 21st Century (MAP-21) Act (PL 112-141) [3], signed into law in July, 2012, extended the provisions of the Stafford Act in allowing states to issue special EDL permits during declared Major Disasters. The provisions allow states to issue special permits during major disasters to overweight vehicles and loads that normally can be dismantled and divided. The permits must be issued in accordance with state laws, and the permits are issued exclusively to vehicles and loads that are delivering relief supplies or are directly aiding in the relief effort.

FEMA – Major Disasters in MAASTO

FEMA maintains a database [4] of all Major Disasters declared across the country. The database can be searched by state affected, year, declaration type, and incident type. As part of the background review, all major disasters declared in the ten MAASTO states since 2018 were reviewed. The FEMA information includes a summary of impacted regions, timeline of declaration, funding obligations associated with the declaration, and reports and notices issued (including damage assessment). Figure 2-1 shows a sample of information available through FEMA’s website using the State of Illinois as an example. Figure 2-2 – Figure 2-5 provide a summary list of the disasters reviewed for the region. The COVID-19 pandemic entries are highlighted to reflect that COVID-19 is the first major disaster that affected all states simultaneously. This disaster elevated the importance of coordinated multi-state freight corridor management in providing for the efficient delivery of divisible loads during disasters.

Illinois Severe Storms and Flooding
DR-4461-IL

Incident Period: Feb 24, 2019 - Jul 3, 2019
Declaration Date: Sep 19, 2019

Quick Links

- Multilingual support: [FEMA in your language](#)
- Recovery resources: [State & Local](#) | [National](#)
- Connect: [Social Media](#) | [Mobile App & Text](#)
- 24/7 counseling: [Disaster Distress Helpline](#)

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On This Page

- Local Resources**
- Funding Obligations**

More About This Disaster

- Designated Areas** →
Individual Assistance | Public Assistance | How a Disaster Gets Declared
- News & Media** →
Events | Press Releases & Fact Sheets | PDFs, Graphics & Multimedia
- Reports & Notices** →
Disaster Federal Register Notices | Preliminary Damage Assessments

Figure 2-1: FEMA major disaster information - Sample case

Event	Code	Incident Period	Date Declared
ILLINOIS			
COVID-19 Pandemic	DR-4489-IL	Jan 20, 2020 - ongoing	Mar 26, 2020
Severe Storms and Flooding	DR-4461-IL	Feb 24, 2019 - July 3, 2019	Sep 19, 2019
INDIANA			
COVID-19 Pandemic	DR-4515-IN	Jan 31, 2020 - ongoing	Apr 3, 2020
Severe Storms and Flooding	DR-4636-IN	Feb 14, 2018 – Mar 4, 2018	May 4, 2018
IOWA			
Sac & Fox Tribe of the Mississippi DERECHO	DR-4561	Aug 10, 2020	Sep 10, 2020
Severe Storms	DR-4557-IA	Aug 10, 2020	Aug 17, 2020
COVID-19 Pandemic	DR-4483-IA	Jan 31, 2020 - ongoing	Apr 3, 2020
Sac & Fox Tribe of the Mississippi – Severe Storms and Flooding	DR-4430	Mar 13 – Apr 1, 2019	Apr 29, 2019
Severe Storms and Flooding	DR-4421-IA	Mar 12, 2019 – ongoing	Mar 23, 2019
Severe Storms and Tornadoes	DR-4392-IA	Jul 19, 2018	Sep 12, 2018
Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4386-IA	Jun 6 – Jul 2, 2018	Aug 20, 2018

Figure 2-2: FEMA - Recent disasters in Illinois, Indiana, and Iowa

Event	Code	Incident Period	Date Declared
KANSAS			
COVID-19 Pandemic	DR-4504-KS	Jan 20, 2020 - ongoing	Mar 29, 2020
Severe Storms, Straight-line Winds, Tornadoes, Flooding, Landslides, and Mudslide	DR-4449-KS	Apr 28, 2019 – ongoing	Jun 20, 2019
Severe Storms, Straight-line Winds, and Flooding	DR-4417-KS	Oct 4 – 15, 2018	Feb 25, 2019
Severe Storms, Straight-line Winds, and Flooding	DR-4403-KS	Sep 1 – 8, 2018	Oct 19, 2018
KENTUCKY			
Severe Storms, Flooding, Landslides, and Mudslide	DR-4540-KY	Feb 3 – 29, 2020	Apr 24, 2020
COVID-19 Pandemic	DR-4497-KY	Jan 20, 2020 - ongoing	Mar 28, 2020
Severe Storms, Straight-line Winds, Flooding, Landslides, and Mudslide	DR-4428-KY	Feb 6 – Mar 10, 2019	Apr 17, 2019
Severe Storms, Tornadoes, Flooding, Landslides, and Mudslide	DR-4361-KY	Feb 21 – Mar 21, 2018	Apr 26, 2018
Severe Storms, Flooding, Landslides, and Mudslide	DR-4358-KY	Feb 9 – 14, 2018	Apr 12, 2018

Figure 2-3: FEMA - Recent disasters in Kansas and Kentucky

Event	Code	Incident Period	Date Declared
MICHIGAN			
Severe Storms and Flooding	DR-4547-MI	May 16 – May 22, 2020	Jul 9, 2020
COVID-19 Pandemic	DR-4494-MI	Jan 20, 2020 - ongoing	Mar 27, 2020
Severe Storms, Flooding, Landslides, and Mudslides	DR-4381-MI	Jun 16 – Jun 18, 2018	Aug 2, 2018
MINNESOTA			
COVID-19 Pandemic	DR-4531-MN	Jan 20, 2020 – ongoing	Apr 7, 2020
Severe Winter Storm, Straight-Line Winds, and Flooding	DR-4442-MN	Mar 12 – Apr 28, 2019	Jun 12, 2019
Severe Storms and Flooding	DR-4414-MN	Oct 9 – 11, 2018	Feb 1, 2019
Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4390-MN	Jun 15 - Jul 12, 2018	Sep 5, 2018
MISSOURI			
Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4552-MO	May 3 – 4, 2020	Jul 9, 2020
COVID-19 Pandemic	DR-4490-MO	Jan 20, 2020 - ongoing	Mar 26, 2020
Severe Storms, Tornadoes, and Flooding	DR-4451-MO	Apr 29 – Jul 6, 2019	Jul 9, 2019
Severe Storms, Straight-line Winds, and Flooding	DR-4435-MO	Mar 11 – Apr 16, 2019	May 20, 2019

Figure 2-4: FEMA - Recent disasters in Michigan, Minnesota, and Missouri

Event	Code	Incident Period	Date Declared
OHIO			
COVID-19 Pandemic	DR-4507-OH	Jan 20, 2020 - ongoing	Mar 31, 2020
Severe Storms, Straight-line Winds, Tornadoes, Flooding, Landslides, and Mudslide	DR-4447-OH	May 27 – 29, 2019	Jun 18, 2019
Severe Storms, Flooding, and Landslides	DR-4424-OH	Feb 5 – 13, 2019	Apr 8, 2019
Severe Storms, Landslides, and Mudslide	DR-4360-OH	Feb 14 – 25, 2018	Apr 17, 2018
WISCONSIN			
COVID-19 Pandemic	DR-4520-WI	Jan 20, 2020 - ongoing	Apr 4, 2020
Severe Winter Storm and Flooding	DR-4477-WI	Jan 10 – Jan 12, 2020	Mar 11, 2020
Severe Storms, Tornadoes, Straight-line Winds, and Flooding	DR-4459-WI	Jul 18 – Jul 20, 2019	Aug 27, 2019
Severe Storms, Tornadoes, Straight-line Winds, Flooding, and Landslides	DR-4402-WI	Aug 17 – Sep 14, 2018	Oct 18, 2018
Severe Storms, Straight-line Winds, and Flooding	DR-4383-WI	Jun 15 – 19, 2018	Aug 10, 2018

Figure 2-5: FEMA - Recent disasters in Ohio and Wisconsin

AASHTO Effort for Permit Harmonization

The American Association of State Highway and Transportation Officials (AASHTO) has historically had a major focus in the truck permit area. From the early over size and weight permit work of the Standing Committee on Highway Transport (SCOHT) that has evolved to the Committee on Transportation Systems Operations (CTSO) [5], the focus of national and state efforts has been on harmonizing operations, equipment, and all relevant regulations in support of unhindered multi-state freight movement.

In another AASHTO effort on national permit data harmonization [6], permit information from all 50 states (including data displayed on permits, common names and headings, and physical layout of information) has been collected to identify opportunities to harmonize permit information. While the focus of the undertaking is not on EDL permits (AASHTO uses single trip over dimensional permits for key analysis), it highlights the need for a focus on harmonizing all aspects of permits issuance across freight corridors, regions, and nationally.

Summary of Background and Charge

The Stafford Act and MAP21 legislation authorizes state DOTs to permit increased truck weights for vehicles carrying divisible emergency supplies to areas within a presidentially declared disaster area. These declarations are for truck operations on the interstate system only. Similarly, state level emergencies, declared by a state governor are applicable on state facilities but not federal facilities. As an exception, a few states, Indiana being one of them, have a grandfathered clause allowing state declared disasters to apply to federal interstates as well as state facilities.

3. SURVEY CONDUCTED WITH MAASTO STATE PERMITTING AND ENGINEERING

To understand the variables, policies and regulations involved in EDLs, a series of interviews with MAASTO state personnel and FHWA permit experts were conducted. The interviews were followed by focused group discussions with both the permitting and structures groups. The group meetings were conducted independently, and then the groups were combined to jointly evaluate the scenarios and context. All ten states provided representation for each group with approximately twenty-five DOT professionals participating in the project. The three phases of professional input provided for a progressive evaluation of scenarios and smoothed the often-disparate perceptions of EDL loads and issues across permits and structures professionals. The interviews and focus groups were conducted during the summer of 2021.

Permits and Operations Group

Representatives from the truck permitting divisions of each MAASTO state were identified and requested for committee participation through the MAASTO SCOHT committee. A survey questionnaire was developed based on the initial agency interviews and was then sent out to these representatives to assess the state's current EDLM policies and preferences. The full survey is show in Figure 3-1.

MAASTO Emergency Divisible Loads Weight Limit Management Strategy

Please provide information for your state for the following questions. Provide attachments if needed. Your response only applies for Presidential Declared Emergencies for the federal system.

Please contact Ernie Perry at 608-890-2310 or ebperry@wisc.edu with questions.

Your State:

Name and email:

1. Does your state currently issue special EDL permits during declared major disasters?
2. Please provide us with copies of recent EEOs and a sample of an issued permit? Or if waivers were declared, please describe.
3. Please provide a list of major disasters declared in your state either prior to 2018 but of particular interest, or after 2018 but not on our current list (from FEMA). Please include date and duration of event and specifics of exemptions and provisions related to weight limits.
4. Is there state legislation related to limits on size and weight during emergency declarations (including any grandfathered clauses for all emergencies, and specific examples for recent events if done on case-by-case basis). Please list or provide link.
5. Please list the current weight limits (regular and EDL) within state.
6. When EDL Permits are issued, are they issued for fixed lengths of time?
7. Are you aware of any multistate / corridor coordination efforts for standardizing EDL limits or exemptions in the past? In the MAASTO region or in the U.S.?
8. What is the state's perception on setting a minimum standard for EDL weight limit at the following levels (please note that we will be surveying with Bridge groups from each state as well independently)?

Please reply agree or disagree. Please provide any specific comments as well.

- a. 88k lbs (or +10% from 80k) gross weight
- b. 90k lbs (or +12.5% from 80k) gross weight
- c. +10% per axle load from regular limits
- d. +12.5% per axle load from regular limits
- e. Weight limit higher than 90k lbs, and if agreeable, how much.
- f. Other options? Please list.

9. Please share any additional information on EDL limits or processes you would like to share.

Thank You!

Ernie Perry, Ph.D.

ebperry@wisc.edu

608-890-2310

Figure 3-1: Survey questionnaire sent to representatives of permits group

Responses from the states were processed and evaluated to assess each state's existing permitting systems, and their perceptions of increased EDLM limits. A summary of the survey results is presented in Table 1. This table represents the permitting group's opinions on setting EDLM gross vehicle weight (GVW) limits at 88k and 90k, and axle load limits at 10% and 12.5% above regular weight limits.

Table 1: Permit group - EDLM limit scenarios acceptability chart

State	Gross Weights		Axle Loads		Comments
	88k	90k	+10%	+12.5%	
Illinois	Dark	Dark	Light	Light	
Indiana	Dark	Dark	Light	Light	
Iowa	Dark	Dark	Light	Light	Max. 96k with 20k per axle.
Kansas	Dark	Light	Dark	Light	
Kentucky	Dark	Light	Light	Light	
Michigan	Light	Light	Light	Light	Michigan legal weight can exceed 90k gross
Minnesota	Dark	Dark	Dark	Dark	
Missouri	Dark	Dark	Dark	Dark	100k if route evaluation passes.
Ohio	Dark	Dark	Dark	Dark	No gross limit. 29k single axle.
Wisconsin	Dark	Dark	Light	Light	

Note: Dark coloration represents scenario is agreeable to the group, light fill implies it is agreeable with additional checks, and no coloration represents scenario is not favorable.

Bridges Group

In the second stage of the process, bridge and structures representatives were identified through contacting the State’s Chief Bridge Engineer and requesting representation for the project. The bridge evaluation representatives from each MAASTO state were convened for a preliminary focused project introduction and discussion of the issues, goals, as well as constraints. Based on known bridge load issues and the bridge group input, a survey addressing their perceptions and preferences regarding EDLM permitting was developed and distributed.

This survey focused on (1) obtaining input on feasible EDLM weight limit scenarios from the bridge group, (2) providing an understanding of the state’s current weight restriction policies, and (3) detailing the bridge and structures metrics and standards used to evaluate bridge loads and permitting scenarios.

MAASTO Emergency Divisible Loads Weight Limit Management Strategy

Please provide information for your state for the following questions. Provide attachments if needed. Your response only applies for Presidential Declared Emergencies for the federal system and only for the Interstate System (not including reasonable access roads)

Please contact Ernie Perry at 608-890-2310 or ebperry@wisc.edu with questions.

Your State:

Name and email:

1. Please share any links or documents for resources and manuals used in your state for allowed axle load configurations / bridge postings.

2. What is your state's perception on setting a minimum standard for EDL weight limit at the following levels (please note that a positive reply to a gross weight limit does not imply gross weight would be tolerated regardless of axle configuration. In building scenarios, we will consider lowest common denominators across options)?

Please reply agree or disagree. Please provide any specific comments.

- a. +10% per axle load from regular limits
- b. +12.5% per axle load from regular limits
- c. 88k lbs (or +10% from 80k) gross weight (with some combination of acceptable axle load configurations)
- d. 90k lbs (or +12.5% from 80k) gross weight (with some combination of acceptable axle load configurations)
- e. Weight limit higher than 90k lbs, and if agreeable, how much.
- f. Other options? Please list.

- 3. What are the maximum acceptable EDL weight limits for the following configurations:**
- a. Single Axle**
 - b. Tandem Axle (with/without dimension restrictions)**
 - c. Triple Axle (with/without dimension restrictions)**
 - d. Quad Axle (with/without dimension restrictions)**
 - e. Maximum Gross Weight**
- 4. Data request – Please provide an interstate bridge dataset, including geolocations and any weight restrictions. Please add details on relevant posting information if available. We can work with a web link or emailed database.**
- 5. Please share any additional information on EDL limits or processes you would like to share.**

Thank You!

Ernie Perry, Ph.D.

ebperry@wisc.edu

608-890-2310

Figure 3-2: Survey questionnaire sent to representatives from bridge evaluation group

Table 2 and Table 3 present tabular summaries of the survey results. Table 2 presents the bridge group responses, similar information as in Table 1 for permit representatives. Table 3 offers a more detailed look at the maximum EDLM weight limits acceptable to the state bridge group by truck configuration.

Table 2: Bridge group - EDLM limit scenarios acceptability chart

State	Gross Weights		Axle Loads		Comments
	88k	90k	+10%	+12.5%	
Illinois					Federal bridge formula, Max 5 axle
Indiana					Prefer no blanket approval
Iowa					Federal bridge formula. Max 96k
Kansas					
Kentucky					Through automated permit system
Michigan					
Minnesota					Max 99k – 7 axles (timber hauler)
Missouri					Max 88k for grain
Ohio					
Wisconsin					Emergency Executive Order #24 (COVID-19) set 12.5%, 90k

Table 3: Maximum acceptable EDLM limits by configuration

State	Single axle	Tandem axle	Triple axle	Quad axle	GVW
Illinois	25k	48k	48k	52k	68k / 76k / 100k / 120k for 3/4/5/6 axle
Indiana					
Iowa	20k	40k	60k	80k	90k
Kansas	22k	37.4k	48k	55k	88k
Kentucky	Prefer no blanket approval. Check axle configuration and route against permit system.				
Michigan	+10% from standard				
Minnesota	18k	36k	51k	58k	99k
Missouri	20k	40k	60k	60k	90k
Ohio	29k	50k	60k	80k	No Limit
Wisconsin	By EEO #24 (for COVID-19) - +12.5% single / axle group / GVW				

The results of the two surveys were analyzed and discussed with the respective groups to develop candidate EDLM scenarios that addressed the needs and concerns from each state. The surveys were also critical in assessing primary concerns from the focus groups, including but not limited to:

- 1) continuing to evaluate permit requests against their existing permitting systems based on route and axle configuration, specifically mentioned by Indiana and Kentucky,
- 2) restricting approvals to single unit (up to 5 axle) trucks,
- 3) identifying the importance of local bridges for access and egress to the interstate system,
- 4) concerns for local authorities' abilities to evaluate bridges on local roadway systems and providing reasonable means of access to the interstate system with heavier EDL loads.

4. PROPOSED MINIMUM EDLM WEIGHT STANDARDS SCENARIOS

After reviewing survey responses and comments received from the MAASTO states, and in consideration of existing regulations for truck weight limits in general conditions as well as during disasters, four candidate EDLM scenarios were created. These scenarios were developed to reflect a range and combination of weight standards (GVWs and axle weights) that covered each state's specific needs and constraints. The scenarios were created using combinations of clauses relaxing the GVW and axle load limits by either 10% or 12.5% (corresponding to a GVW setting of 88k tons or 90k tons respectively).

Two main aspects of the vehicle weight limits were considered:

- 1) Gross Vehicle Weight (GVW): From a policy perspective, increasing the GVW for EDLM scenario is the simplest, as it can be conveyed directly and without ambiguity.
- 2) Axle load limits: Setting axle load limits is critical to bridge evaluations. Thus, it was considered important to set axle load limits in conjunction with GVW limits.

For both clauses, an increase of 10% and of 12.5% above current federal standards were considered. These increments correspond directly to relaxing the prevalent 80k GVW limit to 88k and 90k respectively. These weight limits are used in many states across the country for specific permits. Our initial discussion and survey results revealed that most states were not comfortable discussing scenarios that included greater than a 90k minimum GVW. While some states already operate at higher standards, scenarios with GVW >90k were not considered as these scenarios were unlikely to satisfy the range of state regulations. Additionally, a critical concern for overweight vehicles on local roads was highlighted by both groups. While it is critical to deliver the needed relief supplies, local roads are generally not built to handle heavier truck loads.

Scenarios Presented

After assessing the responses from both the bridge and permit groups, a total of four scenarios were developed and presented to the groups. The scenarios are:

- 1) Scenario 1: 88k GVW.

Scenario 1 provides for the EDLM GVW limit to be raised to 88k.

- 2) Scenario 2: 88k GVW with 10% increase to axle load limits.

Scenario 2 extended Scenario 1 by adding a 10% increase limit to existing axle load limits in addition to the 88k GVW limit. States were again generally favorable and felt the 10% axle constraints provide additional control.

- 3) Scenario 3: 90k GVW with 10% increase to axle load limits.

Scenario 3 increases the GVW of scenario 2 from 88k to 90k (12.5% increase over the 80k standard), while maintaining a maximum increase of axle load limits by 10%.

- 4) Scenario 4: 90k GVW with 12.5% increase to axle load limits.

Scenario 4 offers a 12.5% increase to both the GVW limits (90k), as well as existing axle load limits. This would translate to 22.5k (up from 20k) on a single axle, and 38.25k (up from 34k) on tandem axle groups.

At the request of all participating states, it was deemed important to note that while the scenarios presented new minimum standards for EDLM weight limits, the recommended scenario would not, in any way, exclude or make obsolete other requirements and ordinances used by the states. This includes, as a primary example, use of the existing state permitting systems for maximum size/dimension restrictions and route verification, as well as adherence to existing bridge load posting restrictions.

5. EDLM SCENARIO EVALUATION

Analysis of Bridges and Structures

To analyze the potential impact of the proposed EDL standards, a database of weight restricted bridges on the interstate system was created for each state and then combined for the region. Each state was requested to provide bridge evaluation data for bridges under their jurisdiction on the interstate system. The data provided identifying bridge evaluation ratings (for each axle load configuration evaluated within the state, focusing on single unit trucks,) and location information for the weight restricted bridges. Based on directives of relevant legislation and the goal for a regionally harmonized EDLM approach, the project focused solely on the interstate system. State routes are considered in the context of access to the interstate system and the potential impacts to local pavements and bridges from increased interstate weight limits.

Evaluation ratings were analyzed against each candidate scenario to generate statistics on the incremental number of bridges that would be affected by the proposed scenarios. This provides an understanding of the impact of raising the EDLM limits according to the proposed scenarios on each states' bridges. This approach allows for assessment of the impact on major freight interstate corridors across the region. Table 4 provides a summary of the number of bridges that would be impacted under each scenario in each state. This is based on bridges with operating load ratings lower than 80k, 88k and 90k thresholds. Figures 5-1 through 5-8 present a more detailed view of the geographic impact of the EDLM scenarios. The figures show the locations of bridges that would require posting or mitigation, and route specific evaluation under each candidate scenario for EDL permitting.

Table 4: Analysis of scenarios – Number of bridges impacted

	IA	IL	IN	KS	KY	MI	MN	MO	OH	WI
Posted at 80k or lower	0	0	17	0	0	0	0	0	2	0
Need posting for 88k	1	0	48	0	27	5	0	25	30	5
Need posting for 90k	1	0	60	0	28	5	6	30	48	5

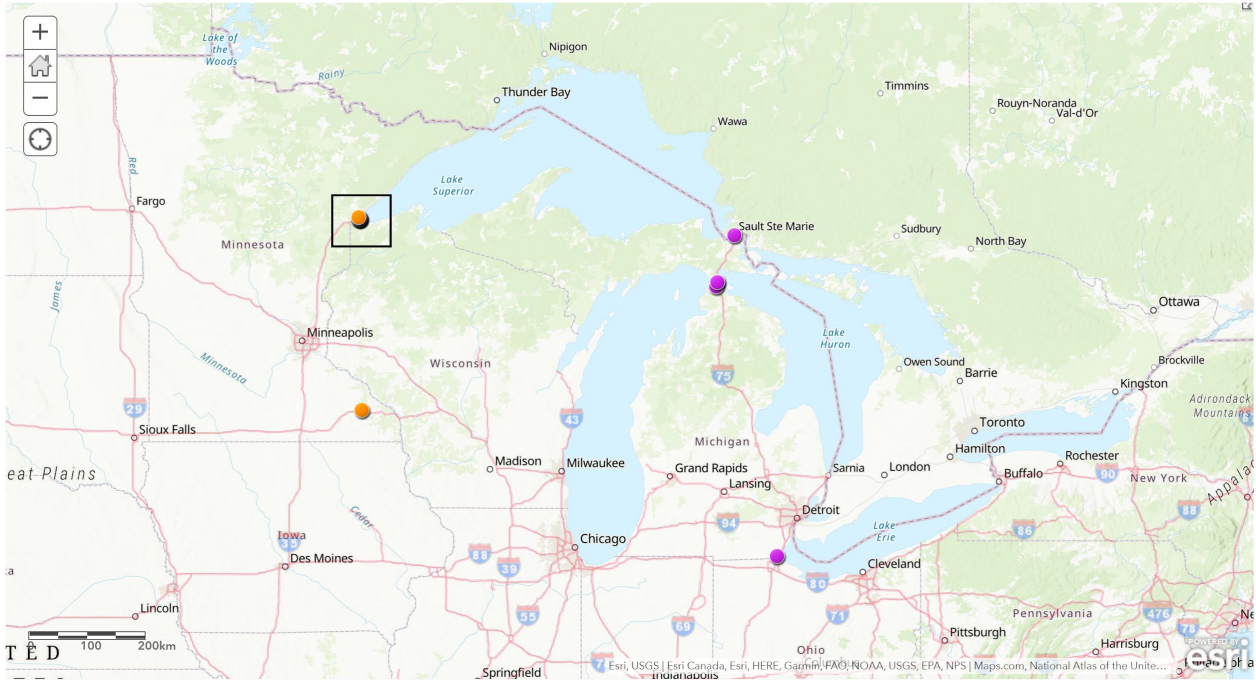


Figure 5-1: Bridges affected in Minnesota, Wisconsin, and Michigan

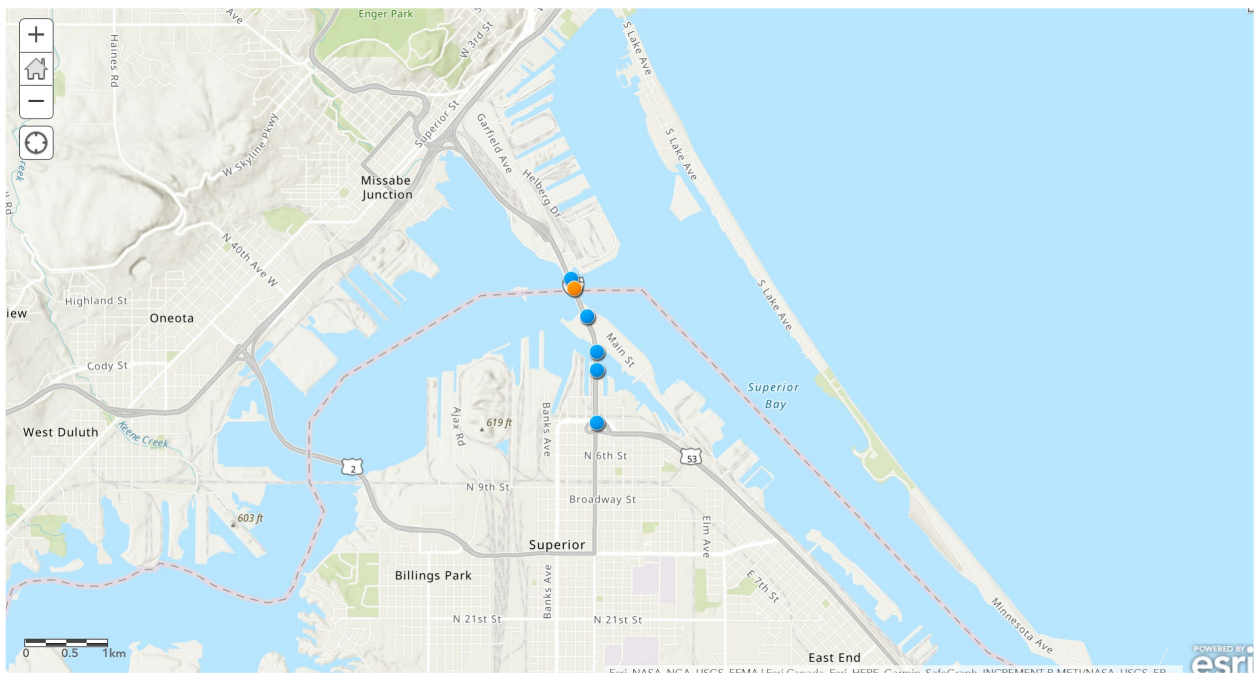


Figure 5-2: Bridges affected near Duluth (cutout from map of WI/MN)

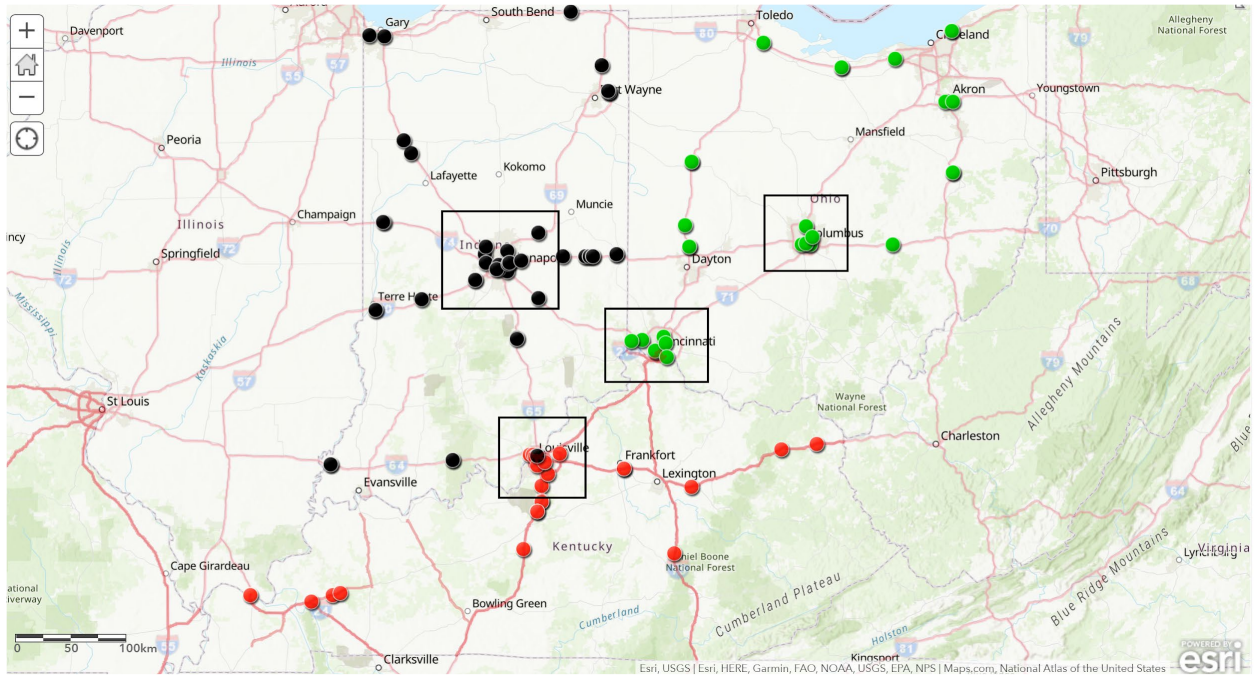


Figure 5-3: Bridges affected in Indiana, Ohio and Kentucky

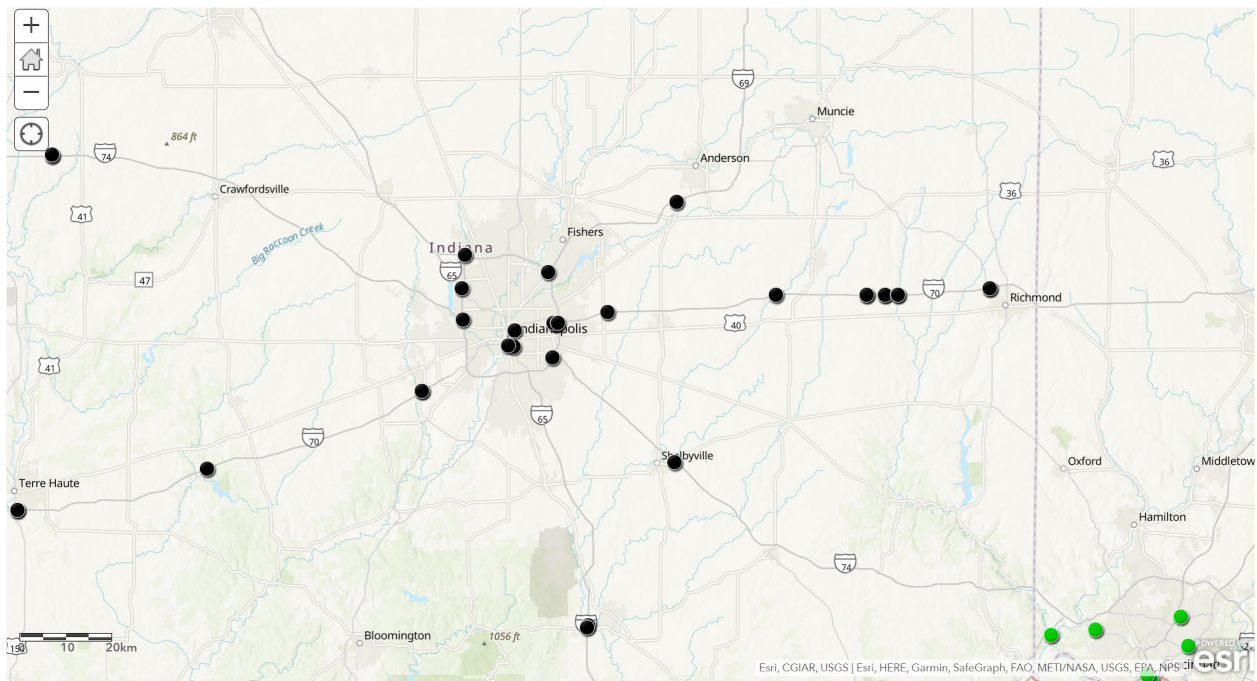


Figure 5-4: Bridges affected near Indianapolis (cutout from map of Indiana)

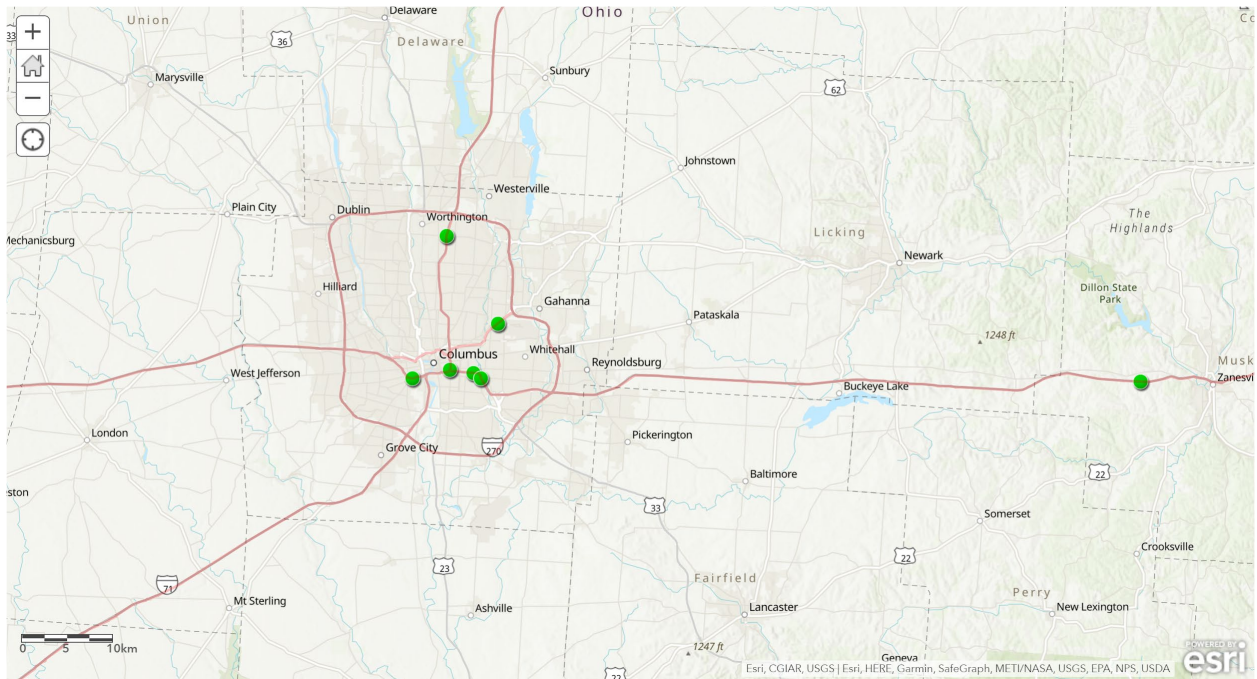


Figure 5-5: Bridges affected near Columbus (cutout from map of Ohio)

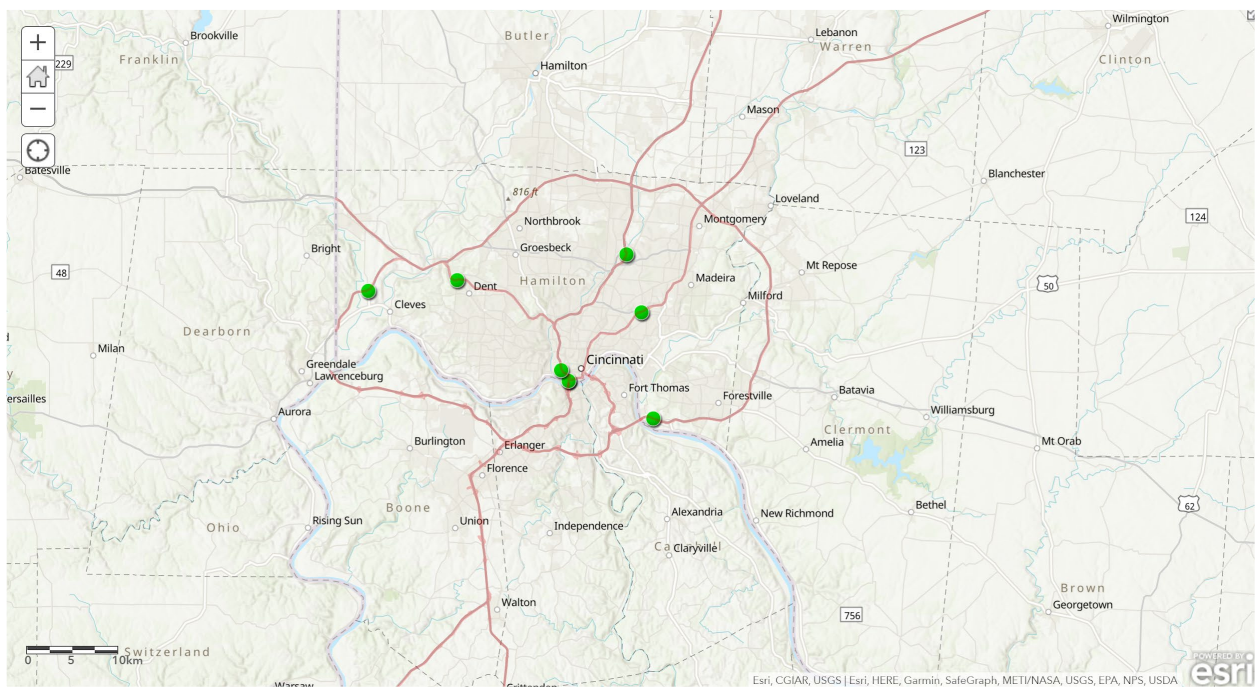


Figure 5-6: Bridges affected near Cincinnati (cutout from map of Ohio)

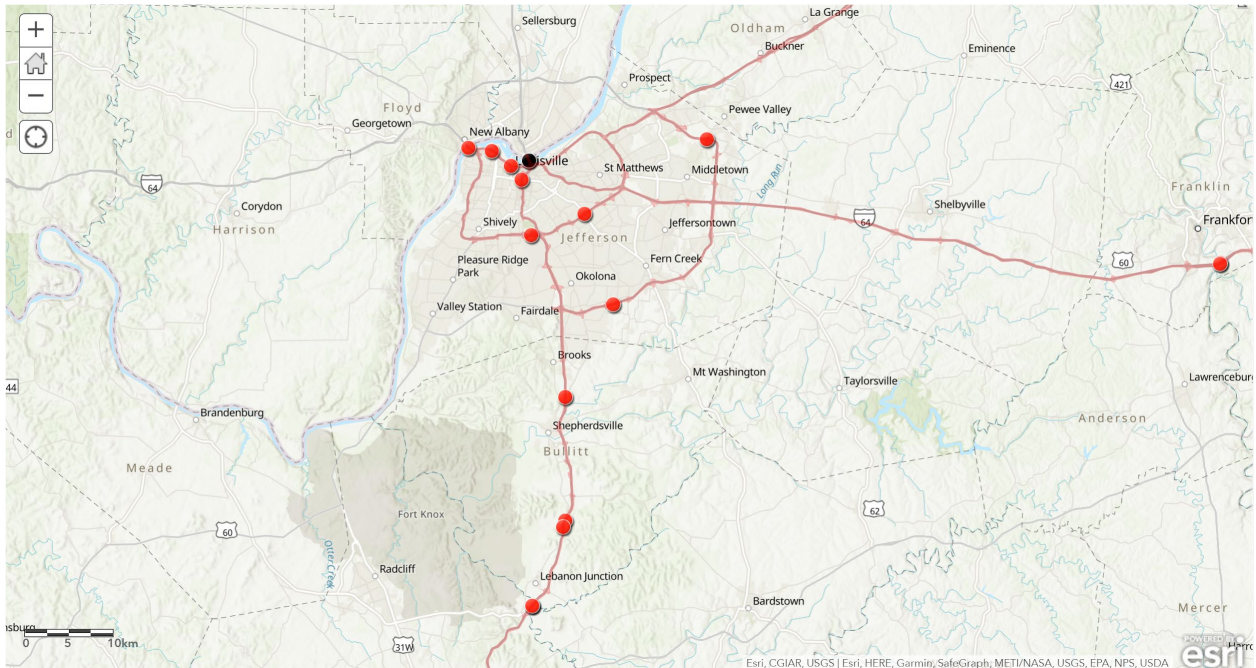


Figure 5-7: Bridges affected near Louisville (cutout from map of Kentucky)

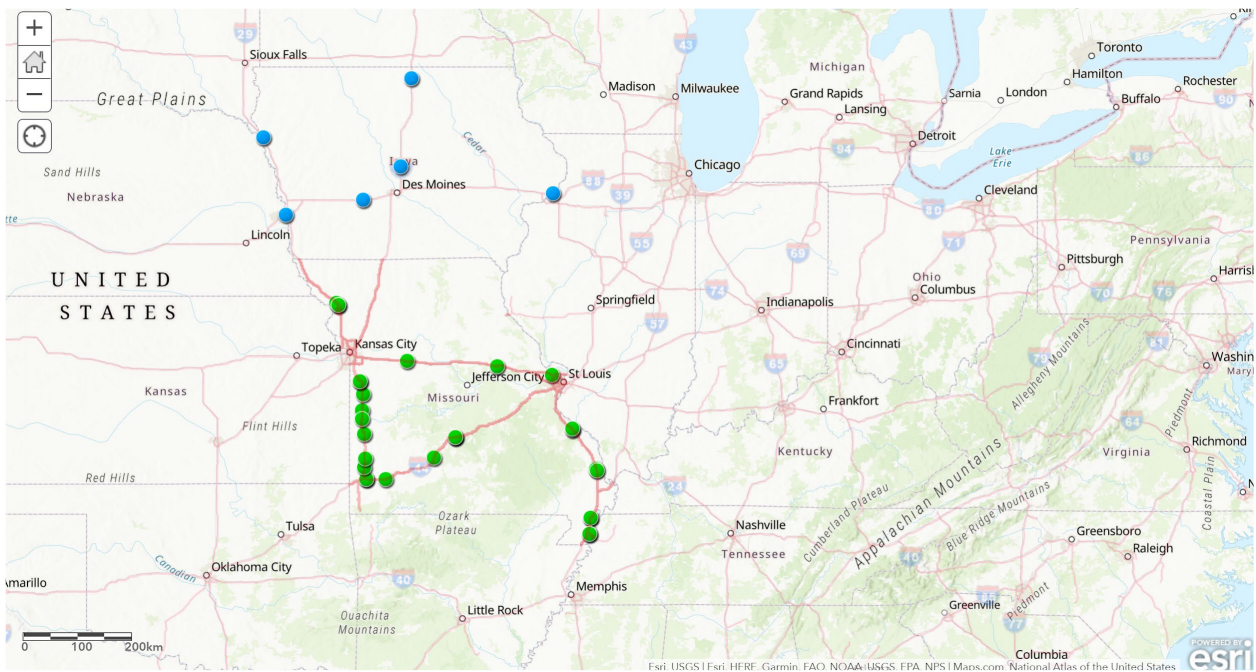


Figure 5-8: Bridges affected in Iowa and Missouri

Discussion with States

The evaluation and findings for the candidate scenarios were then presented to a combined group of all bridge and permit participants. During the focused discussions that followed, participants were asked to raise any concerns over the scenarios, the process, and the potential impacts of the EDLM scenarios. They were led through a discussion to resolve differences in understanding of the scenarios, the potential scenario impacts, and the critical nature of harmonizing the EDLM strategy across the MAASTO region. The individuals were then asked to vote on each of the scenarios and identify their preferences.

Table 5 presents the preference shared by the States for each scenario. Most states preferred to implement either Scenario I or II (least load) while Minnesota and Wisconsin shared a preference for Scenario IV over the others, and Ohio weighed each scenario as equally acceptable, noting that Ohio imposed no GVW limits under their most recent EDL provisions. Notably, Indiana, Kansas and Kentucky expressed objections to Scenario IV's 12.5% increase to axle load limits in conjunction with 90k GVW. The constraints identified by each state were discussed to address each of the concerns and work to unify the EDLM across MAASTO states.

Table 5: Scenario Evaluation - State preferences pre-finalization

	IA	IL	IN	KS	KY	MI	MN	MO	OH	WI
Scenario I	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Light Pink	Dark Red	Dark Red	White
Scenario II	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	Light Pink	Dark Red	Dark Red	White
Scenario III	Dark Red	Dark Red	Dark Red	White	Dark Red	Dark Red	Dark Red	Dark Red	Dark Red	White
Scenario IV	Light Pink	Light Pink	White	White	White	Light Pink	Dark Red	Light Pink	Dark Red	Dark Red

Note: Darker shades represent higher preference.

Final Recommendations

Scenario 2 (88k GVW with a maximum 10% increase to axle weight limits) is recommended as the permitting scenario for EDL movement during major disasters in the MAASTO region. This recommendation is based on the project surveys and focused discussions with the state representatives, current federal and state legislative directives, an assessment of bridges and structures along the major interstate freight corridors, and consultation with the Project Initiation Team to ensure project outcomes reach expectations.

This scenario provides a combination of increasing the axle load weight limits by 10% while setting the gross vehicle weight limit at 88k lbs. It represents the optimal preference considering the safe and efficient delivery of emergency supplies during a major disaster, while also considering the potential impacts on local roads and bridges, and the distinct state infrastructures and regulatory/operational preferences. Scenario 2 garnered 100% support across the 10 MAASTO states. The states further suggested that the recommended EDLM strategy be considered as a minimum standard, with states having the ability to allow higher weight limit EDL permits within their jurisdiction as preferred. An MOU was created in coordination with the MAASTO BOD staff to reflect the outcomes of this project (see Appendix A) and was approved unanimously by the 10 members of the MAASTO BOD.

6. CONCLUSIONS

Summary

This project presents a collaborative effort undertaken by MAASTO states to define a regionally uniform EDLM strategy. Based on surveys and interviews conducted with the MAASTO states, four candidate EDLM scenarios were developed representing possible increased gross vehicle weight and axle load limits. The scenarios were presented to representatives from the MAASTO states for evaluation. A recommended scenario (Scenario 2 – 88k GWV +10% axle loads) was unanimously agreed upon by all ten states. This scenario represents the optimal preference ensuring safe and efficient delivery of emergency supplies during a major disaster. The scenario recommendation was approved by the Project Initiation Team and a MAASTO MOU was created to reflect the recommendations of the PWG and PIT. The MOU was presented to and approved by the MAASTO BOD.

Identified concerns and key factors

Through discussions and surveys with PWG members, numerous concerns and considerations were identified. These issues reflect a range of contexts and operational settings that have been addressed through the project process. The comments and concerns are outlined below:

States can set higher load limits

With region-wide standardization as the ultimate objective, the first step (the focus of this study) was to find the common minimum EDLM standards. This study recommends raising the minimum standard for EDL limits from the de-facto 80k lbs. to 88k lbs. While all states agreed to adoption of this scenario, they may continue to allow higher weight limits than those proposed by this study within their jurisdiction.

States prefer existing permit evaluation systems

The states showed strong preference for continuing the use of their state-specific permitting systems. This includes evaluation of requests to issue EDL permits by route, and accounting for axle and load configurations. While this study recommends minimum uniform EDLM across the region, it should be noted that some structures on the interstate system are not suitable for increased weights and would be excluded from routing EDL as well as other Oversize/Overweight (OSOW) movements. The states' permitting systems and procedures are preferred for final clearance of EDL movements and OSOW.

The EDLM recommendations are for the Interstate System only

The entirety of the discussions and results presented through this report should be viewed only in the context of the Interstate roadway system. The recommended EDLM is specific to divisible loads on the Interstate system only.

Reasonable access to interstate system and local impacts

A key aspect identified through the study concerned the reasonable access and movement from the interstate to the local roads and ultimately the disaster areas. As noted already, the recommendations of this study should be considered applicable only to the interstate system, not including any entrance or egress routes beyond the normal access. The EDLM strategy is a critical and coordinated step to increase freight efficiencies and disaster relief. Additional EDLM coordination with local road owners will be critical to the success of the MAASTO EDLM strategy.

Further coordination with states adjacent to MAASTO can be expected to provide additional benefits.

Evaluation abilities for local authorities

Expanding on the importance of considering reasonable access to the Interstate, agencies in charge of local systems and structures may not be equipped to evaluate their bridges for higher EDL weight limits. Again, during disasters, increased coordination with local agencies will be required to ensure adequate resources to evaluate the load and move.

Size limits, existing laws and posted limits

The proposed EDLM strategy does not override any existing laws in place with respect to size and dimensional requirements or posted weight limits (such as those on posted bridges) that are otherwise applicable.

Commodities

The study notes that further investigation and standardization efforts are needed to set guidelines on commodities currently exempt under EDL. This would allow for uniform load characterization and allowances across the region.

MAASTO's committee structure

Effective committee structures such as those at MAASTO, including the SCOHT, MCC, STIC, and Planning committees, allowed for rapid project progress. The committees' role in successful multi-state activities should not be underestimated. The committees provide familiar working relationships, shared experiences, and opportunities to build trust. And there are existing communication channels, especially across the SCOHT and MCC partners. These relationships allowed for immediate action on the project. MAASTO states should be commended for collaborating and working towards uniform regulations to support the delivery of emergency relief supplies during times of crisis.

REFERENCES

- [1] R. T. Stafford, "Robert T. Disaster Relief and Emergency Assistance Act (Stafford Act)," FEMA, ammended, 2013.
- [2] Public Law 93-288, "Disaster Relief Act," 1974.
- [3] "Moving Ahead for Progress in the 21st Century Act," Public Law 112-141, 2012.
- [4] Federal Emergency Assistance Agency, "FEMA - Major Disasters," [Online]. Available: <https://www.fema.gov/disaster/declarations>.
- [5] "AASHTO Working Group on Freight Operations," [Online]. Available: <https://systemoperations.transportation.org/subcommittee-on-operations/working-group-on-freight-operations/>.
- [6] Athey Creek Consultants, "Permit Data Harmonization Best Practices," Apr 2021 (latest revision, unpublished).

APPENDIX A – MEMORANDUM OF UNDERSTANDING



MEMORANDUM OF UNDERSTANDING

Agreement to Create MAASTO Emergency Divisible Load Management (EDLM)

This Memorandum of Understanding (MOU) is made and entered into by and among the Illinois Department of Transportation, Indiana Department of Transportation, Iowa Department of Transportation, Kansas Department of Transportation, Kentucky Transportation Cabinet, Minnesota Department of Transportation, Michigan Department of Transportation, Missouri Department of Transportation, Ohio Department of Transportation, and the Wisconsin Department of Transportation (hereinafter referred to as “Partners,” or in the singular, “Partner”).

WHEREAS, the Mid America Association of Transportation Officials (“MAASTO”) is the Midwest transportation organization to the America Association of State Highway and Transportation Officials (“AASHTO”), a nonprofit, nonpartisan association representing highway and transportation departments. The goal of MAASTO is to foster the development, operation, and maintenance of an integrated and balanced transportation system that adequately serves the transportation needs of the state Partners.

WHEREAS, freight movement in the MAASTO region’s freight corridors is a critical component of the economy and our everyday lives. Operating 24 hours per day, over six billion dollars’ worth of goods move across MAASTO region’s freight corridors each year. Over seventy percent of the total freight value of all modes is moved by trucks, with a minimum of fifty percent and a high of eighty percent of the freight value carried by trucks. By weight, sixty-six percent of all tonnage is moved on trucks across the MAASTO States.

WHEREAS, the nation’s freight corridors connect our communities, our homes, and our economy. Within three miles of the major freight corridors reside fifty-six percent of all businesses, and sixty-three percent of all employees. These critical corridor connections heighten the importance of uninterrupted freight service.

WHEREAS, the COVID pandemic, extreme flooding and other disasters have demonstrated the critical importance of a robust and resilient freight system to deliver life-saving and sustaining relief supplies. With the urgency of the disaster and related impacts to the logistics sector, the special permitting of larger divisible loads allows for more rapid deployment of critical relief supplies to reach the needed communities.

WHEREAS, in response to this critical need for rapid and full response during a disaster, the Robert T. Stafford Disaster Relief and Emergency Assistance Act (hereinafter referred to the



“Stafford Act”), (PL 100-107, signed into law November 23, 1988; amended the Disaster Relief Act, 1974, PL 94-288) allows the President to declare Major Disasters.

WHEREAS, during these disasters, States are authorized to issue special permits during periods of Major Disaster permits under Section 1511 of the Moving Ahead for Progress in the 21st Century Act (“Map-21”) for freight movements on the interstate system.

WHEREAS, special permits issued under Section 1511 of MAP-21 for freight movements on the interstate system and will expire not later than 120 days after the date the President declares a Major Disaster.

WHEREAS, the ability to efficiently transport critical emergency divisible loads to impacted areas may be slowed by road and bridge limitations, truck and operator considerations, and varying regulations across the region.

WHEREAS, the potential for delay related to possible divergent regulations may require immediate coordination by these states during times of Major Disasters to allow expedited delivery of relief supplies.

WHEREAS, uniformity of expanded truck weights for these disasters supports the rapid and efficient delivery of relief supplies.

WHEREAS, the states herein are desirous of a creating a framework for cooperation for the purposes of expedited movement of emergency supplies during Declared Major Disasters.

NOW THEREFORE, as leaders of our state departments of transportation, we express our mutual understanding and cooperative relationship as follows:

1. **THAT** the purpose of this MOU is to establish a minimum EDLM permitted weight that all ten (10) MAASTO States (individually described as “Partner” or in the plural, “Partners”) can agree to and adopt.
2. **THAT** each Partner may appoint and maintain one or more points of contact to represent the respective Partner for this effort, which contacts will be distributed as part of this MOU via electronic communication. Each Partner may change its own point(s) of contact at any time by notifying the other Partners in writing via electronic communication or U.S. mail,
3. **THAT** the Partners may refer to this effort as the “MAASTO EDLM Strategy”.



4. **THAT** this MOU does not create any financial obligations.
5. **THAT** subsequent and pursuant to a Major Disaster declaration under the Stafford Act and corresponding State declaration this MOU creates a MAASTO region wide EDLM policy expanding emergency interstate truck weights from 80,000 lbs. to a permitted weight of 88,000 lbs. with no more than a 10% increase per axle, to the extent such weight increase is practicable.
 - 5.1. **THAT** this approach considers the critical and immediate need for relief supplies, the ability and desire of the trucking industry to increase emergency weights where possible, and the overweight permitting processes and engineering characteristics distinct to each State.
 - 5.2. **THAT** agency coordination with state and local governments during Declared Major Disasters is necessary to ensure permitted loads can safely reach the areas in need once off the interstate system.
 - 5.3. **THAT** permitting and bridge professionals from all ten (10) MAASTO States participated and agreed upon this approach to EDLM.
 - 5.4. **THAT** this agreement exists solely for the interstate system and is operative for the interstate system only.
 - 5.5. **THAT** the permitted weight of 88,000 lbs. with the 10% axle accommodation represents the base level for the region. States may allow heavier permitted weights and manage their permitting process as determined by that agency.
 - 5.6. **THAT** all existing laws, posted weight limits, and vehicle specifications remain regardless of EDLM permit status.
 - 5.7. **THAT** the expanded permitted weight for EDL management across the nation is expected to lead to additional efforts to harmonize and create regional efficiencies in logistics and freight movement.
 - 5.8. **THAT** each Partner enters into this MOU voluntarily as a department of transportation and not as a principal, agent or joint venture. Nothing in this MOU shall be construed as consent by any of the Partners to suit in courts of any of the undersigned states, nor does this MOU grant a waiver of the Partners' individual sovereign immunity or rights under the Eleventh Article of Amendment to the Constitution of the United States. This MOU does not grant any rights to any party not herein undersigned. Nothing in this MOU shall be deemed to create or give rise to any right of action or any liability to any third party, claiming to have suffered a loss, damage or injury by virtue of any alleged action taken to comply with the terms of this MOU,
 - 5.9. **THAT** any change in this MOU, whether by modification or amendment, is only valid by a written agreement, signed by a duly authorized representative of each of the Partners, and



5.10 THAT any party may, upon 30 days written notice to each of the other parties, amend, or discontinue its role outlined in the MOU. Because of this mutual desire to proceed, each Partner fully intends to make a good faith effort to achieve the goals described above including working together to find mutually beneficial solutions when problems arise.

IN WITNESS WHEREOF, the Partners have entered into this MOU on the date last written below.

DRAFT



Illinois Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Illinois Department of Transportation
Date: _____

Indiana Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Indiana Department of Transportation
Date: _____

Iowa Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Iowa Department of Transportation
Date: _____

Kansas Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Kansas Department of Transportation
Date: _____

Kentucky Transportation Cabinet. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Kentucky Transportation Cabinet
Date: _____

Michigan Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Michigan Department of Transportation
Date: _____

Minnesota Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Minnesota Department of Transportation
Date: _____



Missouri Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Missouri Department of Transportation
Date: _____

Ohio Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Ohio Department of Transportation
Date: _____

Wisconsin Department of Transportation. I concur with this Memorandum of Understanding.

By: _____
Title: _____, Wisconsin Department of Transportation
Date: _____

DRAFT

