

MIT Center for Transportation & Logistics | Roundtable Report

Fuel Supply Chain Workshop Summary: Discussing 2024 Disasters and Developing a Response Playbook

MIT Humanitarian Supply Chain Lab

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MIT Humanitarian
Supply Chain Lab



MIT Center for
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Logistics



Executive Summary

On December 11-12, 2024, the MIT Humanitarian Supply Chain Lab held a workshop in Cambridge, MA with industry, academic, non-profit and government stakeholders to discuss fuel supply chains in the 2024 hurricane season and establish a foundation for developing a fuel response playbook for future disasters.

This report summarizes the key discussions and takeaways, operational challenges faced in recent hurricanes, best practices, and important concepts to form the foundation of a fuel response playbook in future disasters.



Workshop Goals

This workshop was designed with the following goals in mind:

1. Discuss experiences from Hurricanes Helene and Milton to understand where bottlenecks emerged, what adaptations worked and who engaged to meet the challenges presented by these back-to-back events.
2. Developing concepts and ideas for a fuel response “playbook” that could be referenced by private and public sector stakeholders in disasters

Reflecting on Past Events

In the first day’s discussion, the group reflected on hurricanes that made landfall in the few months before the workshop: Hurricane Helene (landfall on September 26, 2024) and Hurricane Milton (landfall on October 9, 2024). The group discussed challenges with last mile fuel delivery in each event, adaptations that the private sector made in response to the challenges, and key lessons learned in each event.

Hurricane Helene:

- **Challenges:** Communication breakdowns, severe flooding, limited terminal access, and delayed waivers for terminal operations all presented challenges to delivering fuel.
- **Adaptations:** Daily coordination calls with key stakeholders and enhanced relationships with government agencies helped streamline responses.
- **Lessons Learned:**
 1. Consistent protocols for essential worker access and waivers (initial timing, duration, and regional approaches) are needed at fuel terminals and .
 2. Prioritization of terminal power restoration.
 3. Public education to minimize panic and misinformation.
 4. Weight Waiver Adjustments: Axle weight variances must also be considered for tank trucks carrying dry bulk commodities, which often underfill due to load-shifting concerns.

Hurricane Milton:

- **Challenges:** Loss of ~40% of state fuel supply (Tampa), limited truck driver availability, and generator allocations to other states by vendors to respond to recent storms all presented challenges to last mile fuel delivery.
- **Adaptations:** Leveraging waivers (e.g., hours of service), public-private partnerships for emergency fuel allocation, and improved data on fuel inventory were all ways that the private sector adapted to serve demand.
- **Lessons Learned:**
 1. **Faster implementation** of regional waivers
 2. **Better prioritization** of available generators.
 3. **Terminal Throughput Improvements:** Expanded staffing during crises could allow uncredentialed surge drivers to load fuel under supervision. Slip-seating drivers where feasible could also address staffing shortages.

Operational Challenges Across Both Hurricanes:

The following challenges were identified by the group in both Hurricane Helene and Hurricane Milton.

- **Underutilized Waivers:** Weight and Hours of Service (HoS) waivers are essential but underutilized due to liability concerns.
- **Public Misperceptions:** Panic buying fueled by misinformation exacerbated shortages by causing rapid spikes in demand over normal levels.
- **Overburdened Infrastructure:** Lack of redundancy in fuel storage and insufficient staging areas for trucks during emergencies.
- **Terminal Inefficiency:** Turnaround time at terminals was slow and resulted in long waits.

Best Practice: Florida Fuel Coordination Cells

The **Florida fuel calls** emerged as a key strategy for ensuring rapid, coordinated responses during disasters like Hurricanes Helene and Milton. These calls, held daily during crises, became essential for aligning public and private sector efforts and addressing real-time challenges.

Structure and Participants

- **Timing:** The calls occurred daily at **2 PM** and were kept brief, typically **5-7 minutes** long, to focus on actionable updates.
- **Participants:** Approximately **190 individuals** participated, including:
 - Meteorology experts for real-time weather updates.
 - Florida Department of Transportation (FDOT).
 - Florida Trucking Association (FTA).
 - Major **oil companies** and **terminal operators**.
 - Power companies.
 - Fuel wholesalers and marketers.
 - Key industry representatives like **Ned Bowman** (FPMA), **Alix Miller** (FTA), and **Sam Bell** (EMA Disaster Response).

Key Elements of the Calls

The list below summarizes the key attributes of the calls.

- **Focused Agenda:**
 - Updates on storm progression and weather impacts.
 - Status of critical infrastructure: ports, terminals, power availability, and road conditions.
 - Fuel inventory and capacity concerns.
 - Requests for waivers (e.g., weight, HoS).
 - Immediate needs for generators and resources.
- **Closed to Press:**
 - Fuel inventory and capacity concerns.
 - Requests for waivers (e.g., weight, HoS).
 - To build **trust** and foster transparent communication, the calls are intentionally **closed to the press**. Participants emphasized the need for accurate, actionable facts rather than sensationalized information.
 - Importance of this trust: “If you don’t build trust within the phone call, you’re in trouble—you’re not going to get the answers you really need.”
- **Decision-Making:**
 - Facilitators ensure that decisions are driven by real-time feedback from stakeholders, focusing on identifying and resolving bottlenecks quickly.
 - Coordination across public and private entities allowed for swift implementation of solutions, such as obtaining waivers and rerouting fuel deliveries.

- **Efficiency and Inclusion:**
 - New participants were regularly added to the calls as the situation evolved. Staff support ensured that notes and updates were distributed efficiently.
 - **Building Relationships:** Stakeholders emphasized that pre-established relationships (e.g., hurricane expos) were critical to the calls' success.

“Your first phone call can’t be when Rome is burning.”

Why These Calls Matter

The Florida fuel calls demonstrated the power of **centralized communication** during crises:

- They provided a single point for gathering and disseminating critical information.
- They enabled rapid problem-solving by engaging all relevant stakeholders in real-time.
- They **reduced chaos and misinformation**, allowing for more efficient resource allocation.

This model was identified as a key inclusion for a potential **Fuel Response Playbook**, particularly for jurisdictions that lack experience handling large-scale disasters.

Foundation of a Fuel Response Playbook

The second day focused on capturing the group’s input on a fuel response playbook for future disasters. The group identified a short list of strategic levers that should be considered shortly after a disaster to ease fuel distribution bottlenecks and restore flows. In addition, the group identified a longer list of waivers to consider including in a fuel response playbook as helpful for restoring flow. The group also talked about the importance of collaboration, which is discussed in this section. This section concludes with a discussion of the need for a fuel response playbook, as identified based on the conversations in the workshop.

Strategic Levers:

- Establishing **regional waivers** to cover broader geographic responses. See below for additional discussion on waivers. Some are better suited for regional application, whereas some only influence an individual terminal or location.
- Creating **consistent credentialing systems** for essential workers to allow them to work across multiple physical sites (e.g., fuel terminals) easier after a disruption.
- Developing **real-time data-sharing platforms** for inventory and road conditions.
- **Law enforcement escorts:** Expanding National Guard roles for fuel tanker escorts where law enforcement resources are constrained.

Collaboration Gaps:

- Strengthening relationships between private and public sectors, particularly law enforcement, terminal operators, and state agencies.
- Including underrepresented voices like terminal workers, single-store operators, and emergency managers.

Strategic Levers: Waivers

This section summarizes the various waivers identified throughout the meeting. This list is not meant to be exhaustive. Rather, it can serve to inform the development of a fuel response playbook.

1. Weight Waivers

- Allows trucks to exceed standard weight limits (e.g., 90,000 lbs).
- Regional waivers were emphasized to ensure continuity for interstate travel.
- **Challenges:**
 - Liability concerns, especially with slick roads or shifting loads.
 - Advocacy for a 10% axle variance to address dry bulk commodity hauling.

2. Hours of Service (HoS) Waivers

- Extends the driving hours allowed for truckers to complete deliveries during emergencies.
- **Challenges:**

- Underutilized due to liability risks for trucking companies if accidents occur.
 - Suggested nuanced use (e.g., extending 12-hour limits to 14 hours for specific loads).
3. **Oversize Waivers**
 - Permits trucks carrying oversized loads to bypass standard restrictions.
 4. **Tanker Tightness Fitness Test Waivers**
 - Waives requirements for tanker inspections during emergencies to speed up operations.
 5. **Registration Waivers**
 - Temporarily lifts registration requirements for new trucks entering service during a disaster.
 6. **RVP (Reid Vapor Pressure) Waivers**
 - Adjusts fuel specifications, allowing summer and winter fuel blends to be used interchangeably during supply shortages.
 7. **Dyed Diesel Waivers**
 - Permits the use of dyed (tax-exempt) diesel fuel for broader purposes, including non-agricultural use.
 8. **Terminal-Specific Credentialing Waivers**
 - Streamlines driver access to multiple fuel terminals by waiving the need for unique credentials at each location.
 - Suggested creating a unified credential system across all terminals. The state of Florida is considering mandating this.
 9. **Emergency Training and Access Waivers**
 - Enables surge drivers or non-credentialed drivers to operate under supervision at terminals.
 10. **TWIC (Transportation Worker Identification Credential) Waivers**
 - Allows non-TWIC credentialed drivers to access terminals with law enforcement escorts.
 11. **Hot Food Waivers for SNAP Benefits**
 - Allows SNAP recipients to purchase hot, prepared food during emergencies.
 - **Issue:** Federal approval often comes too late, after the immediate crisis has passed.
 12. **Pipeline and Port Operation Waivers**
 - Permits adjustments to pipe and pump sizes or protocols to expedite fuel transfers at ports and terminals.
 13. **Escort “Waivers”**
 - Enables law enforcement or National Guard to escort fuel tanker trucks into restricted or high-risk areas.

Key Considerations for Waiver Effectiveness

- Waivers must be **issued promptly** (ideally 4-5 days before a disaster).
 - **Regional coordination** is critical to ensure waivers are recognized across state lines.
 - Proactive **education of legislators and officials** can expedite waiver approvals.
 - Waivers should balance emergency needs with public safety, liability, and operational efficiency.
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Collaboration

This section covers the group’s observations on the importance of collaboration, the challenges to making it happen and opportunities for the future. These considerations are important in the development of a response playbook as coordination is fundamental to success. No one entity or organization can solve these types of fuel challenges alone after a disaster.

Importance of Regional Coordination Before a Disaster

Effective disaster response requires **seamless collaboration** across state lines. Participants emphasized the need for **regional waivers** to allow trucks and fuel deliveries to move freely between states. Delays occur when states independently issue waivers, leaving neighboring jurisdictions out of alignment. For example, Florida can act quickly, but waiting on Georgia or South Carolina slows the response.

Participants underscored that collaboration during a disaster cannot start “**when Rome is burning.**” Building coalitions before emergencies—such as through hurricane expos, tabletop exercises, or regional planning meetings—allows stakeholders to navigate jurisdictional complexities more efficiently.

Challenges and Potential Solutions

Participants expressed the following challenges to effective coordination, and some potential solutions to these challenges:

Differences in State Policies: States often take **dramatically different approaches** to disaster response, leading to jurisdictional confusion and bottlenecks. Participants stressed the need for (1) **consistent protocols** across regions, especially for **weight waivers** and **Hours of Service (HoS)** approvals, and (2) **access to fuel terminals** and



restricted zones. Without alignment, truckers risk fines or delays when moving between states to deliver fuel.

Shared Communication and Coordination Platforms: A lack of shared data systems and communication tools across jurisdictions can result in **duplicate efforts** and critical delays. Proposals included (1) A shared **regional incident response framework** for coordinating waivers and resource allocation, and (2) Real-time tools to track fuel inventory, road conditions, and terminal status across states.

Political and Operational Challenges: Participants acknowledged the difficulty of coordinating across states, especially when **political priorities** or emergency declarations differ. This challenge is exacerbated in catastrophic contexts, such as would be the case in a seismic event in the **New Madrid Seismic Zone**, for example, where multiple states would need to work together. Lessons from Florida and North Carolina's success in balancing **public-private partnerships** and state agency collaboration offer a model for other regions.

Recommendations for Improvement

Participants made the following recommendations for improving collaboration after disasters.

1. Advocate for **pre-approved regional waivers** during disaster declarations to eliminate delays.
2. Develop a formalized, multi-state **Fuel Response Playbook** to standardize processes.
3. Educate legislators and emergency managers in each state on the benefits of regional collaboration and coordinated action.
4. Use scenario-based planning exercises (e.g., earthquakes, cyberattacks) to simulate cross-jurisdiction responses.
5. Advocate for **terminal improvements** through policy or incentives. Electronic bills of lading for hazardous materials could, if authorized by PHMSA, speed checkout at terminals. Additional terminal staff supporting drivers without credentials to fill trucks and investments in more substantial pumps and larger hoses to increase fill rates could also reduce wait times.



Why a Fuel Response Playbook?

A comprehensive Fuel Response Playbook ensures that public and private stakeholders are aligned and prepared to handle fuel supply chain challenges during disasters. It is critical for the following reasons:

- **Standardized Decision-Making:** A playbook provides a consistent framework for addressing emergencies, helping new legislators and officials quickly understand and act on fuel supply chain needs without delays caused by inexperience.
- **Streamlined Waiver Processes:** By outlining key waivers (e.g., weight, HoS, RVP) and their applications, the playbook reduces confusion and ensures faster approval and implementation across state lines.
- **Enhanced Regional Coordination:** Clear protocols in the playbook ensure that waivers and actions are recognized regionally, avoiding jurisdictional bottlenecks and fostering cross-state collaboration during disasters.
- **Strengthened Public-Private Collaboration:** Including protocols for engaging private-sector stakeholders (e.g., trucking associations, fuel marketers) builds trust and ensures smooth coordination, even during high-pressure situations.
- **Effective Public Messaging:** A playbook supports officials in delivering consistent, factual public communications, minimizing misinformation, panic buying, and other public behaviors that can exacerbate fuel shortages.

- **Proactive Preparedness:** By guiding pre-disaster planning (e.g., pre-approved waivers, training exercises), the playbook ensures that officials and stakeholders are ready before a crisis occurs, saving valuable time during response efforts.
- **Institutional Knowledge Transfer:** The playbook serves as a vital educational tool, helping new legislators, emergency managers, and other stakeholders understand complex fuel supply chain dynamics without relying on ad-hoc training.
- **Long-Term Resilience:** With recommendations for infrastructure investments (e.g., fuel storage, terminal efficiency), the playbook drives initiatives that reduce vulnerabilities and improve response capabilities over time.

Next Steps

The table below summarizes the key next steps identified by participants at the December 2024 workshop. The most significant of those is the development of a fuel response playbook.

Next step	Details
Develop fuel response playbook	Integrate workshop insights into a concise, actionable "Fuel Response Playbook." Include protocols for activities including but not limited to: • Cross-jurisdictional coordination • Pulling specific levers, such as: ○ Waivers: regional, weight (gross and axle waivers), hours of service, etc. ○ Escort planning and coordination with Highway Patrol. ○ Expanding staffing for surge drivers under supervision. • Pre-disaster coordination and preparation activities such as streamlining terminal processes with electronic hazardous materials shipping papers.
Stakeholder engagement	• Engage additional stakeholders: including terminal operators, rail players, and state emergency response directors. • Facilitate scenario-based planning exercises: e.g., cyberattacks, catastrophic earthquakes).
Improve communication tools	Examples include: • Real-Time Data Sharing: Tools like ArcGIS and Florida 511 enable stakeholders to share real-time updates on fuel inventory, road closures, and terminal availability, ensuring informed and timely decision-making.

	• Cross-Agency Coordination: A centralized platform for communication can connect federal, state, and local agencies with private sector stakeholders, reducing duplication of efforts and ensuring everyone has access to the same information. • Public Information Campaigns: Clear, coordinated communication tools can help deliver accurate, accessible messaging to the public to minimize misinformation and panic buying. • Two-Way Communication Channels: Implementing tools for bottom-up feedback allows truck drivers, terminal operators, and other frontline responders to relay critical ground-level information quickly to decision-makers. • Emergency Alerts: Systems like automated SMS/email alerts can notify stakeholders of updates, including new waivers, fuel availability, or road conditions, to improve response times. • Credential Verification Tools: Digital platforms for verifying essential worker credentials (e.g., terminal access, law enforcement escorts) can streamline operations and reduce bottlenecks at terminals and restricted zones. • Pre-Crisis Simulation and Training: Using communication platforms during exercises and training sessions helps ensure all participants are familiar with the tools before an actual disaster strikes. • Community Outreach Tools: Platforms designed to engage local communities, including single-store operators and small businesses, ensure everyone in the supply chain is informed and prepared
Legislative Advocacy	Examples include: • Educate policymakers on the importance of waivers, including adjustments for axle weight variances and faster HoS approvals. • Advocate for state and federal funding and/or grants to expand fuel storage and staging areas.
Expand partnerships	• Strengthen relationships with private sector entities, including convenience stores, trucking associations, and fuel marketers. • Collaborate with the National Guard to explore additional effective tasking during crises.