

May 20, 2025

LOS ANGELES FIRE DEPARTMENT



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INTERIM FIRE CHIEF

May 8, 2025

BOARD OF FIRE COMMISSIONERS
FILE NO. 25-029

TO: Board of Fire Commissioners

FROM:  Ronnie R. Villanueva, Interim Fire Chief

SUBJECT: ALTERNATIVE FUELS TRAINING REPORT

FINAL ACTION:	<input type="checkbox"/> Approved <input type="checkbox"/> Denied	<input type="checkbox"/> Approved w/Corrections Received & Filed	<input type="checkbox"/> Withdrawn <input type="checkbox"/> Other
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SUMMARY

As requested by the Los Angeles City Fire Department (LAFD) Board of Fire Commissioners, the Department is providing a comprehensive overview of the training provided regarding alternative fuels, emphasizing lithium-ion batteries.

RECOMMENDATIONS

That the Board:
Receive and file.

DISCUSSION

The rise of alternative fuels is transforming the landscape of motor-powered equipment and vehicles. In 2023, e-mobility device sales surged by 200%, with battery electric vehicle (BEV) sales accounting for 15% of total vehicle sales by the end of 2024. Projections indicate that by 2035, 48% of global vehicle sales will be BEVs, with California expected to lead due to its mandate for 100% zero-emission, zero-carbon vehicle sales. Local entities, including Los Angeles Metro, Los Angeles Port Authority, and Los Angeles World Airports, have committed to transitioning to 100% zero-emission fleets by 2030, aligning with California's Advanced Clean Cars II regulations. While these initiatives advance environmental sustainability, they introduce significant challenges and health risks for the public and Los Angeles Fire Department (LAFD) personnel.

Risks and Challenges of Alternative Fuels

Alternative fuels pose substantial risks when not in their static state or used as intended, if not properly managed. Currently, available alternative fuels include lithium-ion batteries, liquefied petroleum gas (LPG), liquefied natural gas (LNG), compressed natural gas (CNG), and hydrogen. Each fuel type has unique physical properties and safety concerns, necessitating specialized training and equipment to ensure the safety of LAFD firefighters and the public.

Training and Preparedness Initiatives

To address these challenges, the LAFD has implemented comprehensive training programs and developed critical resources:

- **Annual First Responder Operations Hazmat Training (2021–Present):** Virtual sessions provide written materials, videos, and Standard Operating Guidelines (SOGs) focusing on alternative fuels, with an emphasis on lithium-ion battery emergencies.
- **Chief Officer and Officer Continuing Education Programs (2024):** The Joint Hazard Assessment Team (JHAT) delivered PowerPoint presentations covering all alternative fuels, highlighting lithium-ion battery incidents and departmental policies.
- **CNG Symposium (October 2024):** In-service training included lectures from subject matter experts and hands-on demonstrations with CNG vehicles, equipping firefighters with practical knowledge for safe operations during emergencies.
- **JHAT Engagement:** JHAT members participate in classes, webinars, and workgroups, including the FIREScope Ad Hoc Lithium Battery Sub-Committee, to stay current on alternative fuel trends and develop policies and equipment recommendations.
 - SoCal Hazmat Conference
 - Annual Continuing Challenge Hazmat Conference
 - International Hazardous Response Teams Conference
 - Integrated lectures regarding alternative fuels throughout Hazmat Technician and Specialist Training
 - Meet with manufacturer engineers in the various industries for guidance
- **Training Bulletin #172 – Battery Emergencies:** This bulletin provides detailed information on lithium-ion battery composition, risks, safety considerations, and emergency tactics. A 2024 amendment added SOGs for lithium-ion battery electric vehicle firefighting tactics.
- **Training Bulletin #5 – Auto Fire Training Bulletin:** Currently under review, this rewritten bulletin incorporates all alternative fuel vehicles, outlining hazards, risks, and SOGs for each incident type.

Operational Enhancements

All alternative fuel incidents are classified as hazardous materials incidents due to the potential release of hazardous gases. The LAFD has adapted by dispatching Hazardous Materials Units to all confirmed alternative fuel incidents. These units are equipped with specialized meters to detect hazardous or flammable gases, ensuring

safety for firefighters and the public. Hazardous Materials Teams are trained to neutralize threats and ensure safe removal or disposal of affected devices or vehicles.

Ongoing Challenges and Recommendations

- **Regulatory Improvements**

Despite progress, challenges remain, particularly with lithium-ion batteries, which lack comprehensive regulations. This regulatory gap contributes to a rise in lithium-ion battery emergencies. Cities such as New York, San Diego, and San Francisco have implemented local regulations requiring lithium-ion batteries to meet United Laboratories (UL) standards (e.g., UL 2849 for e-bikes, UL 2272 for personal e-mobility devices, and UL 2271 for e-mobility vehicle batteries). These measures have reduced deaths and injuries, offering a model for Los Angeles to consider. Training for command staff to handle large scale alternative energy incidents. Training for firefighters for recognition of alternative fuel incidents.

- **Disposal and Cost Recovery**

The Los Angeles County Fire Department Health Hazardous Materials Division currently manages the disposal of alternative fuels, absorbing associated costs. This approach is unsustainable long-term. The LAFD's Certified Unified Program Agency (CUPA) should assume responsibility for coordinating disposal, with the CUPA Environmental Response Team overseeing on-scene management. CUPA could implement cost-recovery mechanisms, such as cleanup fees, pursue manufacturer or insurer reimbursements, and apply for federal or state disposal grants.

- **Hazardous Materials Unit Staffing**

The LAFD currently operates one fully staffed Hazardous Materials Unit at Fire Station 21, with additional units at Fire Stations 48, 87, and 95 relying on flexed staffing. This model can delay response times, potentially impacting incident outcomes. It is recommended that all Hazardous Materials Units be fully staffed with one Captain I, one

Apparatus Operator, and two firefighters to ensure timely and effective responses.

- **Public Education**

Work with the Community Liaison Office and continue public messaging campaigns which are essential to raise awareness of lithium-ion battery risks. These campaigns should emphasize safe charging practices, proper battery storage, identification of hazardous batteries, and the importance of using UL-certified devices.

CONCLUSION

The transition to alternative fuels presents both opportunities and challenges for the LAFD. The LAFD is working to mitigate risks and protect the public through robust training, operational enhancements, and strategic recommendations. However,

addressing regulatory gaps, improving disposal processes, ensuring adequate staffing, and expanding public education are critical to sustaining these efforts. By adopting proactive measures, the LAFD can continue to lead in safely managing the evolving landscape of alternative fuels.

Board Report prepared by Richard Thompson, Captain II, Joint Hazard Assessment Team.