

FLEET SUSTAINABILITY AND REPLENISHMENT PLAN

FY 2025-2030



OFFICE OF THE STATE FIRE MARSHAL
ACTING STATE FIRE MARSHAL JASON M. MOWBRAY

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INTEGRITY | FAIRNESS | SERVICE



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Definitions

1. **Operational or Operations Vehicle-** Refers to the daily use vehicles of the agency, including, OIV, BTV, CSV, CEV, and ESV as defined below.
2. **Operational Investigative Vehicle (OIV)-** ¾ Ton Pick-Up Crew Cab Truck, standard bed assigned to Deputy State Fire Marshals.
3. **Bomb Technician Vehicle (BTV)-** 1-ton Pick-up Crew Cab Truck, Standard bed assigned to a Deputy State Fire Marshal- Bomb Technician, who is FBI Hazardous Devices School (HDS) Certified
4. **Command Staff Vehicles (CSV)-** ½ ton Pick-Up Crew Cab Truck, Standard Bed assigned to Field Operations Section Deputy State Fire Marshal's- Supervisors, who are not HDS certified or as assigned by the Chief Deputy State Fire Marshal or State Fire Marshal.
5. **Executive Staff Vehicle (ESV)** - ½-ton Pick-Up Crew Cab Truck, Standard Bed, or 4WD/AWD style SUV assigned to Deputy State Fire Marshal- Manager, State Fire Marshal, and Public Affairs Officer, Chief Fire Protection Engineer, and other employees as assigned by the Chief Deputy State Fire Marshal or State Fire Marshal.
6. **Code Enforcement Vehicle (CEV)-** Compact SUV or mid-size truck vehicle with AWD/4WD assigned to Fire Safety Inspector and Fire Protection Engineers
7. **Special Operations Vehicle (SOV)-** Purpose-built vehicles designed per a specific mission. This would include robot deployment vehicles.
8. **Vehicle Types:** Throughout this document, the reference to vehicle types are mentioned, these types refer to the Department of Budget Management's vehicle Type Classifications.
 - a. Type 2: Mid Size Sedan - Wagon
 - b. Type 4-9: MP Mid Size Sedan Utility Vehicle - E85
 - c. Type 6-E1: 1/2Ton Pickup Truck Crew Cab 6.4' Bed Fully Electric
 - d. Type 7-L: 3/4 ton crew cab pick-up truck, 8ft Bed 4x4
 - e. Type 8-L: 1-Ton Pick-up Truck, gas (Crew Cab), 6.4' Bed 4x4
 - f. Type 9: Compact utility, gasoline - AWD
 - g. Type 9-H: Compact Utility Vehicles, AWD or 4x4 Hybrid
 - h. Type 10-1: Full-Size Utility Vehicle Extended 4x4 or AWD

Executive Summary

The Office of the State Fire Marshal (OSFM) is an agency of the Department of State Police responsible for statewide fire, arson, and explosive investigations, enforcement of the State Fire Prevention Code through plan review and inspections, coordination of fire prevention efforts, and collection of fire incident data.

Prior to 2017, the OSFM operational fleet consisted mainly of Ford Crown Victorias. However, due to extensive health studies, the national trend for fire investigations and bomb technician vehicles began to shift to platforms that permitted the separation of carcinogenic materials from the passenger compartment. Since FY2017, the General Assembly and Department of Budget Management have supported the OSFM fleet replenishment program.

The OSFM fleet currently consists of 105 vehicles. These vehicles include investigator vehicles, code enforcement, fire investigation units, bomb squad support vehicles, boats, and trailers. 68 of the 105 vehicles are used for daily operations. On average, an OSFM operational vehicle accumulates 20,000 miles per year. Considering this average, the unique demands placed on an operational vehicle, industry and manufacturer recommendations, and DBM's replacement standard, the OSFM established the replacement standard for its operational vehicle at an average mileage of 170,000 and/or an average age of 7 years. At this time, 17% of the OSFM operations fleet is currently over 170,000 miles and 61% is older than 7 years of age. 9% are over 200,000 miles and 2% are approaching 300,000 miles.

The replacement plan for the OSFM consists of three major components, the first being the replacement of all SUV and passenger compartment vehicles to meet the health and safety standards of the agency. Secondly, to ensure the fleet adheres to the above-stated recommendations of 170,000 miles and/ or 7 years. Thirdly, to replace the aging special operations vehicles to sustain operational readiness across the state. To be successful in the recommendations of 170,000 miles and/ or 7 years, the OSFM would have to replace a minimum of 12 vehicles per fiscal year, this does not account for those vehicles that may experience circumstances that require early decommissioning.

In FY 2017, the OSFM began receiving \$300,000 in general funds for new vehicles. Aside from the cost-cutting measures in FY 2021, this funding was maintained until FY 2024, when the legislature approved five additional positions, which increased our fleet by five vehicles. The appropriations included a \$176,000 increase in general funds. Today, the total OSFM budget remains at \$476,100.

The average price range of an Operational Investigative Vehicle (OIV) and Bomb Technician Vehicle (BTV) today is approximately \$70,000, a 60% increase from 2020. In recent years, the typical annual appropriation has failed to support the replenishment schedule. Between FY 2021 and FY 2025, costs for operational investigative vehicles plus equipment have increased by

56%. Even with the additional funding in FY 2024, the OSFM will be capable of replacing 6 or 7 vehicles per fiscal year, not the required 12.

The special operations fleet, which consists of regional response robot units, fire investigation units, trailers, and boats, currently does not have a dedicated funding source. These vehicles have been supported by grants and donations over the last 20 years. These vehicles support the operations of the OSFM in major incidents. These incidents include explosive render-safe procedures and responses to critical incidents such as the Key Bridge and Potomac River plane crash. The average age of the OSFM specialty fleet is 20 years. The recommended industry standard for the replacement of these vehicles is calculated based on age rather than mileage; the recommended replacement age is 15 years. With today's inflation costs it is estimated to be between \$150,000 and \$250,000. Further discussion can be found in the Special Operations Vehicle section of this report.

Operational and Investigative Fleet

The OSFM requires a motor vehicle to perform beyond the function of a typical law enforcement vehicle. The OIV/BTV are required to handle a unique set of demands. Fire and explosive investigators must carry a large selection of tools, evidence collection kits, personal protective equipment, and bomb technician equipment. They must be capable of transporting criminal suspects, carrying heavy payloads, and towing heavy trailers. The estimated payload of investigators' equipment is 1,000 lbs. The vehicles need the capability of towing trailers that may weigh up to 10,000 lbs. Investigators and bomb technicians must carry this equipment to investigate or mitigate incidents across the state. These incidents may require operating in remote areas, in off-road terrain, and in adverse weather conditions. Additionally, investigators are subject to exposure to toxic and carcinogenic material, with the increase of investigator health and safety research, industry standards recommend the separation of these toxic materials from the passenger compartment of assigned vehicles.

Prior to 2017, the OSFM operational fleet consisted mainly of Ford Crown Victorias. Due to extensive health studies, the national trend for fire investigations and bomb technician vehicles started to shift to vehicles that allowed for a separation of carcinogenic materials carried by specific employee classifications as a function of the assigned position. This national trend has seen traction across the country not only in the fire department but also in fire and explosive investigations, so much so that the Bureau of Alcohol, Tobacco, Firearms and Explosives has provided documentation supporting these style vehicles. As stated in the 2016 report, NFPA 1851, *Standard on Selection, care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* 2014 edition, ensembles, and ensemble elements shall not be stored or transported in compartments or trunks with sharp objects, tools, or other equipment that could damage the ensembles or ensemble elements. Where ensembles or ensemble elements must be transported or stored in such environments, the ensemble or element(s) shall be placed in a protective case or bag to prevent damage. The report also states that soiled ensembles and ensemble elements shall not be stored in living quarters or with personal

belongings or taken or transported in the passenger compartment of personal vehicles. Where ensembles or ensemble elements must be stored or transported in such environments, the ensembles or ensemble element(s) shall be placed in a protective case or bag to prevent cross-contamination.

OIVs and BTVs are operated differently than the typical consumer vehicle but also differently than the typical police patrol vehicle (PPV) as defined in the *"MSP Report on Motor Vehicle Fleet, dated August 1, 2018"*. The OIV/BTV are required to handle a unique set of demands. These demands also include:

- 1) long-distance driving;
- 2) rapid acceleration and braking;
- 3) ability to traverse rough and unusual terrain;
- 4) operate in severe weather and temperature;
- 5) ability to carry heavy payloads;
- 6) ability to tow;
- 7) ability to separate carcinogenic material;
- 8) ability to easily clean surfaces

Within the OSFM operational fleet, several positions do not require the full payload requirements that our daily investigators require, these vehicles are known as our Command (CSV) and Executive Staff Vehicles (ESV). Command staff personnel are those Deputy State Fire Marshals- Supervisors who are assigned to the Field Operations Section and do not provide any special operations functions (bomb technician or K9). While these supervisors may still respond to incidents and carry around potential carcinogenic equipment, they are not required to have the full complement of tools and various equipment. It is still important to have the separation of the potential health risks. This is why a smaller crew cab pickup truck is the preferred vehicle for this class of employees. Executive staff are those mainly assigned to headquarters. While some assigned positions are still operational, some are not, which is why the option for a smaller weighted pick-up truck or SUV-style vehicle is suitable for the positions in this assignment. Some positions at headquarters may also assist in special operations and community outreach that require the ability to tow trailers in certain circumstances.

Code Enforcement Vehicle

The OSFM Code Enforcement Vehicle (CEV) fleet is used mainly as inspector and fire protection engineer vehicles. These vehicles may also be used in the case of covert operations if needed for criminal investigations. Before 2017, these vehicles were small sedan-type vehicles. It was determined the small passenger vehicles were not conducive to all of the inspections being conducted throughout the State. These inspectors are responsible for providing fire code inspections and code enforcement in their respective areas. The demands of their duties require the inspector to, at times, report to construction areas and remote areas. Construction sites typically do not have paved roadways and lack any means of access for small non-4wd/AWD vehicles. Our inspectors are also reporting to firework site inspections and firework shows which are usually off-road and can be difficult to reach with those types of

vehicles. It was determined that a four-wheel drive or all-wheel drive-style SUV or mid-size truck was more appropriate for the mission. In 2017, the OSFM began to replace the sedan fleet with small SUVs which have all been Ford Escapes, with two being hybrids. These styles of vehicles have been well received by the Code Enforcement staff, however, the Escapes have consistently experienced significant mechanical failures, resulting in expensive repairs. In 2023, the OSFM purchased five Chevrolet Equinox's. Thus far, the Equinox has not experienced significant downtime; this will continue to be monitored. These vehicles do not require any special upgrades or equipment.

Vehicle Equipment

Today, more than ever, all OSFM-assigned vehicles are considered mobile offices. Thanks to technological upgrades, OSFM staff can receive calls, schedule appointments, complete reports, communicate, and share information with others through the intranet, the Internet, and radio without leaving the vehicle. These upgrades have increased productivity, interoperability, and capabilities and have also allowed for decreased response times.

The OSFM oversees the process of each vehicle. Each type of vehicle in the OSFM fleet contains a slightly different equipment list based on the function of the assigned vehicle. For example, an OIV K9 has more equipment than a standard OIV. The average equipment cost of a fully equipped OIV, excluding the vehicle options, is \$20,000. Price increases are being observed in several markets which are increasing these equipment costs, some drastically. Since the first purchase in 2017, each truck with the exception of a few minor upgrades or adjustments, is fitted in the same fashion. The approximate cost of each vehicle is \$70,000. See Appendix A.

State of the Fleet

Size

The OSFM fleet currently comprises 105 vehicles distributed among seven regional offices. This includes investigator vehicles, code enforcement, fire investigation support, bomb squad support vehicles, boats, and trailers. Currently, the OSFM has 11 vehicles being prepared for upfitting; these upfitting times have been increased due to the increased manufacturing times for certain items.

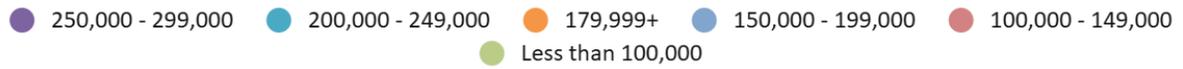
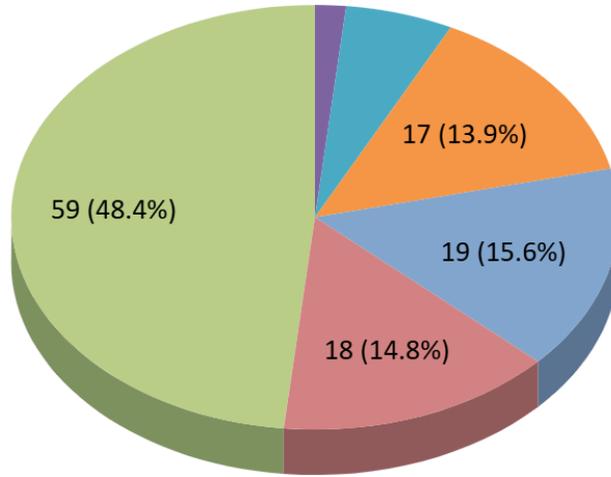
EXHIBIT 1
Regional Fleet Size

| REGION/ UNIT | TOTAL |
|--------------------|------------|
| HEADQUARTERS | 11 |
| SPECIAL OPERATIONS | 26 |
| NORTH EAST | 16 |
| WESTERN | 10 |
| SOUTHERN | 13 |
| UPPER EASTERN | 9 |
| LOWER EASTERN | 9 |
| NEW UNASSIGNED | 11 |
| TOTAL | 105 |

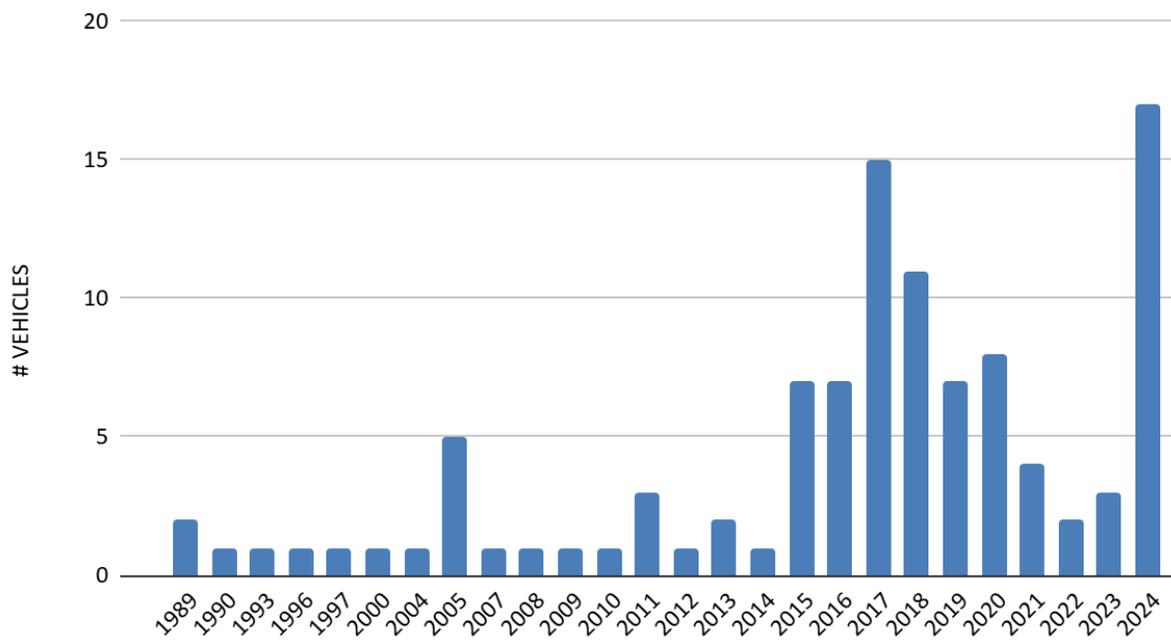
EXHIBIT 2
Fleet By Purpose

| CATEGORY | TOTAL |
|---------------------------------|------------|
| OPERATIONAL INVESTIGATIVE (OIV) | 26 |
| BOMB TECHNICIAN (BTV) | 7 |
| COMMAND STAFF (CSV) | 8 |
| EXECUTIVE STAFF (ESV) | 4 |
| SPECIAL OPERATIONS (SOV) | 21 |
| UNASSIGNED | 11 |
| NEW AWAITING UPFIT | 11 |
| TOTAL | 105 |

Fleet By Mileage



Fleet By Year



Vehicle Replacement Considerations and Criteria

The decommissioning and disposal of OSFM vehicles are decisions based on a combination of factors such as escalating maintenance costs, major rust issues, structural fatigue, extensive body damage, catastrophic mechanical failure, or total loss due to collision, to name a few. In all cases, careful deliberation is given to each vehicle in terms of reliability, costs, maintenance, and safety. These are the same factors the MDSP follows.

As vehicles age and mileage increases beyond 120,000, engines, transmissions, and drive trains are replaced at a significantly higher rate. The objectives of this replenishment and the sustainability plan are consistent with government fleet best practices. They are to:

1. Develop a planned methodology for the replacement of a multi-purposed fleet consisting of passenger cars, small passenger vans, light trucks, SUVs and specialty-type vehicles as required by organizational mission standards and needs.
2. Develop a planned, controlled system of acquisition, disposal, and replacement of motor vehicles that is designed to maximize efficiency and produce the most sustainable fleet practical.
3. Establish a trusted baseline for fleet age and mileage considering both operational and non-operational
4. Develop an optimal fleet consisting of the most practical vehicles while maintaining fleet standardization and supporting operational needs.

The replenishment and sustainability plan that follows considered the following factors:

- present status and needs of the fleet
- industry recommendations
- vehicle utilization
- operational and maintenance costs, including parts availability and the likelihood of major repairs
- vehicle downtime
- technological obsolescence
- condition of the vehicle body and mechanical components
- mileage
- age
- safety
- fleet size
- manufacturers' warranties

Replenishment Standards

The OSFM Fleet, as mentioned before, is unique, and therefore, it can be difficult to truly identify the best rate of replenishment. There are several factors that the OSFM has to consider when determining the rate of replenishment for fleet vehicles. The average operational vehicle is

driven nearly twice as much as the typical consumer/commuter vehicle. On average, an OSFM operational fleet vehicle accumulates 20,000 miles per year. Considering this average, the unique demands placed on a public safety vehicle and the DBM's replacement standard, a more economical and sustainable replacement standard for the OSFM fleet should be an average mileage of 170,000 or an average age of 7 years. At this time, 17% of the OSFM operational fleet is currently over 170,000 miles and 61% is older than 7 years of age.

The Department of Budget and Management states that vehicles with 100,000 miles or more may be eligible for replacement. According to this indicator, along with Maryland Department of State Police, industry, and manufacturer recommendations, the OSFM suggests the replacement of fleet vehicles occurs at or about 170,000 miles and/or 7 years.

Vehicle Replacement Plan

The replacement plan for the OSFM consists of three major components, the first being the replacement of all SUV and passenger compartment vehicles to meet the health and safety standards of the agency. Secondly, is to maintain the fleet to the above-stated recommendations of 170,000 miles and/ or 7 years. Thirdly, is to replace the aging special operations vehicles to ensure readiness across the state.

To meet the goals of the agency's health and wellness standards, the following vehicles need to be replaced or placed into an unassigned status.

OIV: 8 Explorers need to be replaced with OIV standard vehicles

BTV: 4 Expeditions need to be replaced with BTV standard vehicles

CSV: 4 Explorers need to be replaced with CSV standard vehicles

ESV: 1 Explorer and 1 Suburban need to be replaced with ESV standard vehicles

Some OIV and BTV vehicles already meet the mileage guidance of our replacement plan.

These vehicles are as follows:

OIV: 3 K9 trucks (2- 2017/ 1-2018) are at or above 170,000 miles

BTV: 3 BTV trucks are approaching 170,000 miles and 1 is over 220,000 miles (2019 F250)

7 of the 8 OIV explorers will be replaced once the FY25 vehicles are upfitted, there is an extended estimated time of completion due to the time frame to receive some of the equipment.

3 of the Expeditions will be replaced once the FY25 vehicles are upfitted, there is an extended estimated time of completion due to the time frame to receive some of the equipment.

1 of the current BTV trucks will be replaced once the FY25 vehicles are upfitted, there is an extended estimated time of completion due to the time frame to receive some of the equipment.

1 CSV vehicle will be replaced upon delivery and upfitting of a new FY25 vehicle, currently on order.

The below chart identifies the estimated replacement plan, this does not include special operation vehicles or identify vehicles by mileage or emergency replacements. Estimated fleet purchases also do not reflect special operation vehicles.

| Fiscal Year | EST Fleet Purchases | Fleet AVG Model Age | Fleet Avg Mileage | Model Year <= 2016 | Model Year 2017 | Model Year 2018 | Model Year 2019 | Model Year 2020 | Model Year 2021 | Model Year >= 2022 |
|-------------|---------------------|---------------------|-------------------|--------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|
| 2025 | 7 | 2017 | | 18 | 14 | 11 | 7 | 8 | 4 | 22 |
| 2026 | 6 | 2019 | | 12 | 14 | 11 | 6 | 8 | 4 | 29 |
| 2027 | 6 | 2020 | | 5 | 14 | 11 | 6 | 8 | 4 | 36 |
| 2028 | 6 | 2021 | | 0 | 12 | 11 | 6 | 8 | 4 | 43 |
| 2029 | 6 | 2022 | | 0 | 5 | 11 | 6 | 8 | 4 | 50 |
| 2030 | 6 | 2023 | | 0 | 0 | 9 | 6 | 8 | 4 | 57 |

| Estimated Purchases | OIV | BTV | CSV | ESV | SOV | CEV |
|---------------------|-----|-----|-----|-----|-----|-----|
| FY25 | 7 | 4 | 1 | 0 | 0 | 0 |
| FY26 | 2 | 0 | 2 | 1 | 1 | 1 |
| FY27 | 2 | | 3 | 1 | 1 | 0 |
| FY28 | 3 | 1 | 0 | 0 | 1 | 2 |
| FY29 | 3 | 0 | 0 | 1 | 1 | 2 |

Decontamination and Disposal

Providing the employees of the OSFM the right equipment to maintain their health and wellness is the leading priority of the Fire Marshal. Fire investigations by the true nature of the job are “dirty”. Studies have shown fire investigators are exposed to a wide variety of toxins many of which are carcinogenic. These toxins are linked to many aspects of the daily duties of an investigator. These toxins do not stay at the scene once an investigator leaves, these cancer-causing microscopic particles come attached to the investigator, on their personal protective equipment, gun belts, hair, skin, boots, and tools. It can enter through the porous skin, eyes, and airways. As much as one can try to decon before leaving the scene, often, this can be a difficult task. One of the ways to assist with this issue which has been accepted

throughout the fire investigation community is utilizing pickup trucks to help separate these toxins from the passenger compartment.

Currently, the OSFM maintains a fleet of SUV-style vehicles, but these vehicles do not separate these toxic agents. We have made some mitigation efforts to reduce exposure; however, the number one goal is to replace these vehicles as quickly as possible.

While agency vehicles should be decontaminated after each scene, industry standards recommend that thorough decontamination be completed regularly and once the vehicle is decommissioned or reassigned.

¹Fire Investigator Health and Safety Best Practices, Third Edition, 2022

Special Operations Vehicle

Assigned vehicles need to be large enough to handle the volume and weight of the gear necessary to sustain Render Safe Procedures (RSPs). Each Bomb Technician is assigned, and keeps with them, the gear necessary to safely approach, identify, diagnose, and perform small RSPs. Additionally, the vehicles need to have an ATF-approved explosives magazine secured so that BTs can transport and store the needed diverse quantities of high explosives for the RSP procedures. Finally, they need to be completely sealed from environmental effects to resist moisture, extreme heat, and cold. This is necessary to ensure the protection and security of highly sensitive and extremely costly equipment that is stored and transported in each vehicle. Currently, large super-duty trucks with modified slide-out trays and sealed caps are being utilized and seem to be sufficient in providing the much-needed security and environmental protection required to maintain the current equipment inventory.

There are 5 regional response trucks positioned around the state (BWI, South, Northeast, Western, Eastern) designated to store and respond with larger equipment and special tools for actual device mitigation. These trucks are crucial in holding and delivering the medium robot platforms and larger x-ray processing equipment, as well as the complex rigging gear, generating power, scene lighting, smart-TV access for up-to-date news reporting, and complex render safe tools for options the Bomb Tech needs for the safest and least disruptive render safe techniques. A 6th truck (and newest) contains and delivers essential dive gear for the UHDT and serves as a Command Unit for the typically long-term maritime explosive-related events.

Three of these trucks were purchased with post-9/11 funds (*and the only state-funded vehicles*) and are nearing the 20-year life span. They are now largely outdated in terms of technology and space. The other 3 trucks were purchased on Metro Tech / NCR grant funding or Port Security grant funding.

The newest truck was grant-funded at \$80,000 unfortunately, the project was underfunded for what it was designed to be used as. Realistically, we **estimate a 15-year response truck life with a \$450,000 budget** is necessary for proper vehicle replacement. The BWI truck is our main larger incident response vehicle and stores and delivers the large platform robot & a medium platform robot, along with all of the other noted items. It also serves as our Bomb call-out mobile incident command post and any BWI airport incident. **Planning for this vehicle replacement should be set at 15 years and \$550,000.**

| RESPONSE TRUCKS | | | | | |
|-----------------|-----------------------------|---------|--------------------------------|-----------|------------|
| Veh # | Nomenclature | Mileage | Assignment | Budget | Funded |
| 505 | 2020 Ford F550 Dive Command | 10,494 | Dive Command Unit (PSG) | \$150,000 | PSG funded |
| 525 | 2014 International 4400 | 10,083 | BWI Mobile Command truck (NCR) | \$250,000 | NCR funded |
| 529 | 2012 Ford F550 Robot Truck | 10,251 | SRO regional truck (NCR) | \$150,000 | NCR funded |
| 586 | 2005 Savana Robot Truck | 27,301 | LERO regional truck | \$150,000 | State \$ |
| 587 | 2005 Savana Robot Truck | 37,353 | WRO regional truck | \$150,000 | State \$ |
| 588 | 2005 Savana Robot Truck | 25,435 | NERO regional truck | \$150,000 | State 4 |

***Oldest response trucks**

There are supporting pieces of equipment noted below in the following chart. There are three single-vent trailers positioned around the State (South, West, and East) designed to be used to transport potential IEDs to safe locations for RSPs. These trailers can absorb a ‘high-order’ detonation and allow the energy to go straight up and limit the damage to the surrounding areas. These are over 30 years old and recently renovated. The total containment vessels (TCVs) are positioned at the BWI office and the airport for transporting IEDs and are designed to absorb ‘high-order’ detonation, up to 10 pounds of High Explosives with no external damages. This was donated to Maryland from the NRC cache equipment and was renovated about five years ago. There is a small, inflatable, shallow water boat and a larger boat supported by a small and long pull-behind trailer to transport the gear needed for all UHDT events. Both of these vessels were purchased through Port Security Grant funds and were recreational vessels retrofitted to be used for our UHDT mission and have reached their lifespan. ²

² SPECIAL OPERATIONS COMMAND Sustainability Report 2023

MISC GEAR / BOATS / TRAILERS

| Equip # | Nomenclature | Assignment | Budget |
|---------------|--------------------------|----------------------------|--------|
| 515 | 1989 BODI single vent | Eastern | |
| 516 | 1989 BODI single vent | Southern | |
| 518 | Single Vent | Western | |
| BWI's | Total Containment Unit | BWI | |
| TL - 037 | TCV NABCO | BWI internal ops | |
| Bomb TL - 001 | Fireworks burn trailer | Waterloo | |
| Boat 6 | 2011 Zodiac MK V (21 ft) | Inflatable small dive boat | |
| Boat 7 | 2016 Proline SS (26 ft) | Inboard dive boat | |
| TL - 036 | 2011 Ventura | Small boat tow trailer | |
| Boat TL - 001 | 2016 Ventura VATB-8025 | Big boat tow trailer | |
| TL - 023 | 2013 Homestead | Small dive box trailer | |
| TL - 030 | 2015 Vintage 24 ft | Large dive box trailer | |

Fire Investigation Units

In 2012, the OSFM reimagined the theory of a fire investigation unit. The fire investigation unit provides additional equipment for large-scale incidents along with larger equipment that would not fit in the assigned investigator vehicles. The first one, currently identified as FIU-40 was a converted public education van. This van and trailer (517) combination was upfitted using grant funding provided by the Maryland Emergency Management Agency. Today, these vehicles are mainly used for Major Incident Response Team responses and provide additional equipment to fire scenes along with some interior workspace to assist with the collection of evidence, interviews, or note-taking within a climate-controlled area. Today the OSFM has three fire investigation units located strategically within the central, western, and eastern shore areas of Maryland.

All three trucks are beginning to show age and are beginning to have mechanical issues which results in significant downtime.

An evaluation of the fire investigation unit is recommended to identify if a vehicle or trailer would fit the use case of this program. The evaluation would include the cost-benefit between a truck and a trailer, plus the maintenance for a vehicle compared to a trailer. Lastly, the storage of a trailer may prove to be easier.

| RESPONSE TRUCKS | | | | | |
|-----------------|---------------------------------|---------|-------------------------------------|---------|---------------------------------------|
| Veh # | Nomenclature | Mileage | Assignment | Budget | Funded |
| FIU-40 | Fire Investigation Unit | 57,683 | Central Regional Truck (NERO) | 120,000 | State (Vehicle)/ Grant (Equipment) |
| 517 | Fire Investigation Unit Trailer | | Central Regional Trailer (NERO) | | State |
| 507 | Fire Investigation Unit | 32,992 | Western Regional Truck (WRO) | 120,000 | Donation |
| 514 | Fire Investigation Unit | 50,272 | Eastern Shore Regional Truck (LERO) | 120,000 | State |

Appendices

Appendix A:

Office of the State Fire Marshal, Vehicle Specifications, 2025

Appendix B:

Fire Investigator Health and Safety Best Practices, Third Edition, April 13, 2022

Office of the State Fire Marshal
Vehicle Specifications

Fire Investigation

Typical Vehicle:

Ford F250 Crew Cab 6'9 bed
Chevy 2500 Crew Cab 6'9 Bed

Cap:

LEER 100RCC Commercial Cab High
Match Vehicle Color
Side-painted access Doors with Stainless Steel Drop T-Handle
Rear Painted Fiberglass Door with Drop T-Handle
Both Side Tool Boxes with shelf
Dome Light Option F- 2 - 20" Tube Lights with switches
No Carpet Headliner
No front picture window.

Bed Slide:

1500 lb 100% extension slide

Inverter:

Go Power 3000HD Inverter GP3000HD
Installed inside toolbox of cap
Cab mounted switch
GFCI Outlet installed to opposite toolbox

Emergency Lighting:

Emergency lighting will provide a full complement of lighting 360 degrees around the vehicle.
This will also include all-around steady-burn white lighting to provide scene lighting!

Console:

A full console consisting of a laptop mounting solution, radio mount, cup holders, USB/12V charger, and lockbox.

K9 Additions:

Cage with side storage box with interior lighting
Fan on door
Temperature alert system
Slide out ramp

Explosive Option

Typical Vehicle:

Ford F350 Crew Cab 6'9 bed
Chevy 3500 Crew Cab 6'9 Bed

Cap:

LEER 100RCC Commercial Cab High
Match Vehicle Color
Side-painted access Doors with Stainless Steel Drop T-Handle
Rear Fiberglass Door with Drop T-Handle
Dome Light Option E
No Toolbox

Bed Slide:

Custom built per OSFM Specs not needed from vendor

Inverter:

Go Power 3000HD Inverter GP3000HD
Not Installed
Cab mounted switch

Emergency Lighting:

Emergency lighting will provide a full complement of lighting 360 degrees around the vehicle. This will also include all-around steady-burn white lighting to provide scene lighting!

Console:

A full console consisting of a laptop mounting solution, radio mount, cup holders, USB/12V charger, and lockbox.

K9 Additions:

Cage with side storage box with interior lighting
Fan on door
Temperature alert system
Slide out ramp

Fire Investigator Health and Safety Best Practices



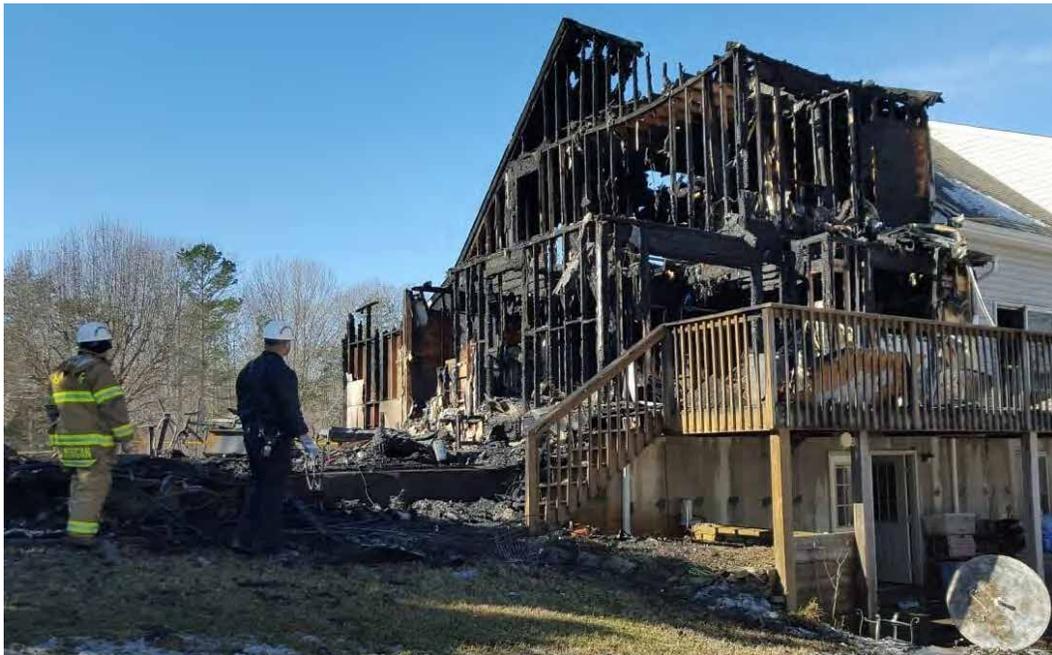
Third Edition
April 13, 2022

The International Association of Arson Investigators, Inc.
Health & Safety Committee

This edition of Fire Investigator Health and Safety Best Practices was prepared by the Health & Safety Committee of the International Association of Arson Investigators, Inc. (IAAI), its advisory panel of subject matter experts, and other technical advisors, and has been approved by the IAAI Training & Education Committee and the IAAI Executive Team for publication.

Every effort has been made to ensure the accuracy of all information presented, however, errors can occur despite this.

Please direct all correspondence regarding this document to: iaai-safety@firearson.com



Credit: Bedford County (VA) Fire Marshal's Office

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Cover design: Scott Muthersbaugh, Perfecta Visuals

behavioral health support for the involved person(s) and team.

1.0.2 Have a program for employee behavioral health awareness and support.

1.0.3 Require that at large-scale investigation scenes, including multi-agency investigations and joint scene exams, a safety officer/manager is designated and following Section 3.1.12 below.

1.0.4 Ensure that all fire investigator training follows the best practices described herein.

1.0.5 Ensure that all live burn training, including burn cell demonstrations, requires all participants and observers in the hot and warm zones to use appropriate PPE, including respiratory protection, and follow the precautions identified in this document and NFPA 1402 [28] and NFPA 1403 [29].

1.0.6 Take a proactive approach to managing fire investigator workplace safety and health by having a formal safety and health program. These programs can prevent workplace illnesses, injuries, and death, and the suffering and financial hardship they can cause for workers, their families, and employers.

1.0.6.1 These programs have been linked to:

- Improvements in product, process, and service quality
- Better workplace morale
- Improved recruitment and retention
- A more favorable image and reputation among customers, suppliers, and the community [22]

1.0.6.2 Include a safety management system approach as part of the health and safety program.

1.0.7 Objectively investigate every employee-involved *accident* and *near-miss* incident

1.0.8 Provide ballistic protection to fire investigators When advisable for personal safety.

Section 2.0 Vehicles

2.0.1 Vehicles used by fire investigators should support the *clean cab concept* and be able to store and transport tools and materials separately, with contaminated items physically separated from the passenger area.

2.0.1.1 Vehicles should not have carpeting or cloth seats. If a vehicle does have these, they should be covered with something that is easily decontaminated or washed.

2.0.1.2 Vehicle electronics should be off the floor to facilitate cleaning.

2.0.1.3 Vehicles should have a portable or fixed water system for the decontamination of persons and tools and immediate cleaning of injuries or direct contact contamination.

2.0.1.4 Vehicles should be equipped with a pressurized water extinguisher and an ABC dry chemical fire extinguisher.

2.0.1.5 Marked vehicles should conform to or follow the principles of the current version of NFPA 1901 or a similar best practice document that addresses emergency vehicle safety marking, such as the USFA Emergency Vehicle Safety Initiative or the FEMA Emergency Vehicle Visibility and Conspicuity Study.

2.0.1.6 All vehicles equipped to operate as an emergency vehicle should have a noise-reducing headset connected to the vehicle's two-way radio(s) to limit the occupational noise hazard produced by the vehicle's audible emergency notification systems (siren(s), airhorns, etc.) for each seat position.

2.0.2 The vehicle's cab interior should be cleaned regularly, regardless of contamination potential.

2.0.3 Containers of collected evidence and soiled/dirty tools and clothing should be stored in areas other than the vehicle's passenger compartment or trunk/boot to prevent off-gassing and airborne particulate exposure.

2.0.3.1 If this is not possible, all items used and worn at the scene should be placed in tight-sealing tubs/containers or sealed in sturdy plastic bags¹⁴.

2.0.3.2 All evidence containers should be appropriately packaged and sealed before being placed in the vehicle.

¹⁴ Turnout gear PPE should be in a minimum 6-mil plastic bag because thinner bags have been shown to tear. Softer PPE, such as that worn during warm and cold scene exams can be placed in

any bag that will effectively contain particulates and off-gassing, and not tear. Both types are to be sealed after being filled. See Section 3.3 for additional information.

2.0.4 Do not enter or allow others to enter your vehicle’s passenger compartment unless ALL potentially contaminated clothing has been removed and all exposed skin areas have been cleaned.

2.0.4.1 In an emergency, such as an evacuation or injury, disposable seat covers or similar should be used to minimize cab contamination.

2.0.5 When examining vehicles, all relevant safety precautions and PPE usage noted in other sections of this document, including the use of proper respiratory protection listed in Appendix B, should be followed.

2.0.6 Fire investigators should recognize that special hazards exist when examining alternative fuel vehicles and educate themselves regarding these hazards before beginning any examination of this type of vehicle¹⁵ [30].

2.0.6.1 This includes checking for vehicle type hazards – electric and hybrid vehicles with lithium-ion batteries and similar. These batteries may be prone to reignition and have been known to reignite as much as 22 hours after initial extinguishment.

2.0.6.2 Shock, fire, and explosion hazards can be present.

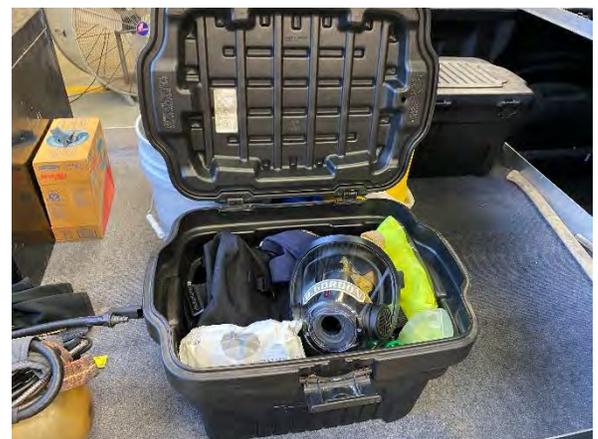
2.0.6.2.1 50 volts DC is lethal. Many electric vehicles have more than 400 volts DC.

2.0.6.2.2 Disconnecting wires/battery cables does NOT equal a safe working environment.

2.0.6.3 Proper PPE and battery-handling precautions are necessary.

2.0.3.1 Investigators should review the applicable safety information for the model vehicle before starting the investigation. This information is available from the manufacturer’s website or the current version of the NFPA Alternative Fuel Vehicles Emergency Field Guide.

2.0.3.1.1 Some owners have self-modified their vehicles to operate on alternative fuel sources. However, because these vehicles likely do not conform to industry standards, special hazards may exist and recommended safety procedures may not apply, thus requiring additional precautions to be taken.



Clean cab examples. Credit: Palm Beach Fire Rescue

¹⁵ There are several applicable cftrainer.net modules available on this subject.