

December 2, 2021
Mr. Douglas L. Parker
Assistant Secretary for Occupational Safety and Health
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, D.C., 20210

RE: Report of the Small Business Advocacy Review Panel on OSHA's Potential Emergency Response Standard

Dear Mr. Parker:

The Small Business Advocacy Review Panel (the Panel), established in accordance with the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), is transmitting to you this report on the Occupational Safety and Health Administration's (OSHA's) potential Emergency Response standard.

The Panel consisted of representatives from OSHA, the Department of Labor's Office of the Solicitor (SOL), Office of Information and Regulatory Affairs (OIRA) within the Office of Management and Budget (OMB), and the Office of Advocacy (Advocacy) within the Small Business Administration (SBA). The Panel was chaired by Jessica Stone of OSHA's Directorate of Standards and Guidance (DSG). The staff from the agencies and SOL who participated in the development of the Panel's report include: Bruce Lundegren (Advocacy), Charles Maresca (Advocacy), Daniel Brown (Advocacy), Stephanie Tatham (OMB/OIRA), Elizabeth Ashley (OMB/OIRA), Maureen Ruskin (OSHA, DSG), Mark Hagemann (OSHA, DSG/OSS), William Hamilton (OSHA, DSG/OSS), Linda Wiles (SOL), Ian Moar (SOL), Jessica Stone (OSHA, DSG/ORA), Thomas Mockler (OSHA, DSG/ORA), Adriana Lopez-Menendez (OSHA, DSG/ORA), Thomas Ransdell (OSHA, DSG/ORA), and Anissa Harmon (OSHA, DSG).

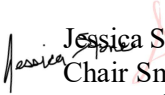
On October 4, 2021, OSHA officially convened the Panel. On October 14, 19, 20, and 21, 2021, the Panel members, along with the Small Entity Representatives (SERs), participated in four teleconferences providing the opportunity for an open discussion regarding the potential standard for Emergency Response. In addition to the teleconferences, the SERs provided the Panel with written comments.

The attached Panel Report includes the Panel's findings and recommendations. Also included as appendices to the report are a listing of participating SERs, the SERs' written comments, and the documents provided to the SERs (the Preliminary Initial Regulatory Flexibility Analysis and the Issues Document). SBREFA requires that this Panel Report and its attachments become part of the rulemaking record. Jessica Stone, the chair, will arrange for the posting of this report into the docket at <http://www.regulations.gov>, the Federal e-rulemaking portal.

The Panel wishes again to thank the SERs for their participation in the early stages of the rulemaking process for this potential standard. The Panel particularly appreciates the time that the SERs took to review the lengthy SBREFA materials sent to them and for providing their comments to the Panel.

Sincerely,

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JESSICA STONE
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 Jessica Stone
Chair Small Business Advocacy Review Panel
Occupational Safety and Health
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
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 Major Clark
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 Edmund C. Baird
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**Report of the Small Business Advocacy Review Panel on OSHA's Potential Emergency
Response Standard**

December 2, 2021

Report of the Small Business Advocacy Review Panel on OSHA's Potential Standard for Emergency Response

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1. INTRODUCTION

This report has been developed by the Small Business Advocacy Review Panel (Panel) for the Occupational Safety and Health Administration's (OSHA's) potential standard for Emergency Response. The Panel included representatives of OSHA, the Office of the Solicitor of the Department of Labor, the Office of Advocacy within the U.S. Small Business Administration, and the Office of Information and Regulatory Affairs of the Office of Management and Budget. On October 4, 2021, the Panel Chairperson, Jessica Stone of OSHA, convened the Panel under Section 609(b) of the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA) (5 U.S.C. 601 et seq.). The Panel chose small entity representatives (SERs) from industries that currently perform emergency response operations (as that term is defined in OSHA's draft regulatory framework), as well as other industries that could be brought within the scope of the potential standard OSHA is considering. The SERs reviewed background materials related to this potential standard and offered their advice and recommendations to the Panel. The Panel is deeply appreciative of the SERs for taking the time to assist the Panel in better understanding the potential impact of an Emergency Response standard on small entities. The body of this report consists of four parts: Part 1 is the introduction; Part 2 explains why OSHA is considering a potential standard for emergency response; Part 3 summarizes the oral and written comments received from the SERs; and Part 4 presents the Panel's findings and recommendations. Appendix A contains a full list of the Panel members and staff representatives from OSHA and the Solicitor of Labor's office; Appendix B contains a list of the SERs; Appendix C includes the written comments submitted by the SERs; and Appendix D 3 contains the Preliminary Initial Regulatory Flexibility Analysis (PIRFA) and the Issues Document sent to the SERs.

2. REASONS WHY REGULATION IS BEING CONSIDERED

Emergency response workers in America face considerable occupational health and safety hazards in dynamic and often unpredictable work environments. Current OSHA emergency response and preparedness standards are outdated and incomplete. The standards do not address the full range of hazards facing emergency responders, lag behind changes in protective equipment performance and industry practices, and conflict with current industry consensus standards. OSHA's current fire brigade standard, 29 CFR 1910.156, was promulgated in 1980 and has only had minor revisions since then.

The draft standard would more closely align OSHA's requirements for emergency responders with the best practices established by the Federal Emergency Management Agency (FEMA). The national response framework (NRF), developed by FEMA, presents guiding principles for

emergency responders and others to prepare for and provide a unified response to emergency incidents and disasters. A companion to the NRF is FEMA's National Incident Management System (NIMS). While NIMS provides a template for the management of incidents regardless of size, scope or cause, the NRF provides structure and mechanisms for incident response policy at the national level.

Every day, the duties of an emergency responder may require making life and death decisions. A typical workday of an emergency responder could range anywhere from responding to a mild medical emergency to a more severe incident such as an act of terrorism. In doing their jobs of protecting the public, personal and real property, and the environment, emergency responders risk exposing themselves to safety and health hazards which may lead to injuries, illnesses, and death.

Emergency responders include, but are not limited to, firefighters, emergency medical service providers (such as EMTs, paramedics), technical rescuers (such as swiftwater, collapse, rope/high angle) and others.

Some of the most common hazards emergency responders may face include:

- vehicle collisions while traveling to or from emergency incidents;
- falls from heights to lower levels due to structural or building collapses;
- being struck by, caught in between, or crushed by falling objects and debris;
- burns and other injuries from flashovers and backdrafts;
- exposure to extreme temperatures, both hot and cold;
- excessive noise exposure;
- exposure to carbon monoxide and other toxic chemicals;
- oxygen depletion and inadequate fresh air to breathe; and
- over-exertion due to lifting heavy objects, wearing protective equipment, repetitive motion, and other similar activities.

Long-term exposure to the various hazards found at emergency incidents may not only lead to physical ailments among responders, but potentially to mental health issues as well. Some longer-term health hazards that may potentially be associated with the duties of emergency responders include:

- exposure to bloodborne diseases;
- cardiovascular diseases due to environmental stressors and exposures;
- cancer due to exposure to asbestos, carcinogens and other chemicals; and
- stress and depression resulting from exposure to traumatic events.

As discussed in the Preliminary Initial Regulatory Flexibility Analysis (PIRFA), the CDC reported 845 firefighter fatalities and thousands of injuries in the line of duty in the U.S. from

2009 to 2017, 47 percent of which were among volunteer firefighters, to due heart attacks, trauma, asphyxiation, burns and other causes. An additional 100 fatalities were reported during the same period among EMS workers.

3. SUMMARY OF SER COMMENTS

Introduction

The Panel hosted four conference calls, on October 14, 19, 20 and 21, 2021, in order to obtain input from the small entity representatives (SERs) on OSHA's draft regulatory framework for a potential Emergency Response standard. Several SERs also submitted written comments to the Panel. The following is a summary of the key issues raised during the video conference calls and in the written comments.

Need for Regulation

While the SERs showed general support for the safety requirements proposed in the draft standard for emergency service organizations (ESOs), concern about the economic feasibility of implementing these requirements in smaller, particularly volunteer, fire departments was common. In support, one SER told the Panel that they saw the training and competency areas of the draft rule to be a fertile area to help ESOs advance in their health and safety performance. However, at least a few SERs questioned whether the hazards identified by OSHA in the PIRFA accurately represented the greatest risks to many fire departments. Some SERs stated the greatest risk they were aware of was driving to and from the emergency, and that perhaps simply providing better training on road safety might accomplish the draft standard's objective. In written comments, one SER summed up the issue of traffic safety stating:

When you look at the data for both EMS and Fire injuries and deaths, it is striking that a large percentage of these numbers are from incidents responding to or returning from alarms. While the proposed changes do require the organization to have response policies, there is little guidance to what those should address. Several of the other changes list resources such as [National Fire Protection Association] (NFPA) standards to guide the requirements. NFPA 1500 chapter 6.2.8 clearly states that an emergency vehicle shall come to a complete stop under any of the following circumstances including at red traffic lights, stop signs and negative right of way intersections. This one change to the regulation would save countless injuries and deaths across the country as intersection accidents are one of the leading causes of injuries and deaths among first responders today.

One SER, in written comments, suggested that the agency should examine the data provided by the United States Fire Administration. In their opinion, the data indicated a relatively low occupational risk from firefighting. The SER wrote that while "[i]t is clear that there is a risk of

death in a dangerous exercise such as firefighting, . . . it is not significant enough to merit the implementation of the [draft] regulations.” One SER summed up these concerns in written comments stating:

Out of the 223 runs that we have responded to, only 12 alarms were working fires where we had to do extinguishment. This is a small percentage of the actual alarms where members are put in danger. Covid 19 is rapidly becoming the number one cause of death in the fire service, followed by heart attacks and being struck on the highway by motorists who are not paying attention for a variety of reasons. Very few firefighters die from injuries sustained at the fire scenes.

In questioning the need for a standard, one SER cautioned OSHA that they saw political risk in any perception of “beating up” on fire departments since those are valued institutions in communities across the country. That SER suggested OSHA use “carrots” or positive incentives rather than “sticks” or punishment to achieve the agency’s aim. One SER suggested that there is some level of inherent risk in firefighting and cautioned that OSHA not create a more significant problem while trying to address the risk to firefighters. One SER felt that there are enough regulations and that ESOs are working on improving responder safety even in the absence of additional OSHA regulations for ESOs. In their written comments, one SER wrote that if OSHA is “looking to prevent death and injuries to firefighters we suggest you look to the [big city fire departments] and other Metropolitan Paid Fire Departments and the US Forest Service,” indicating that responders in those departments are more likely to experience injuries and death.

Scope

Volunteer and Small ESOs

Many of the SERs expressed concern over the inclusion of small and/or volunteer ESOs within the scope of the rule. SERs repeatedly raised the fact that many small and/or volunteer ESOs have no dedicated source of funding and would, therefore, find it difficult to complete the additional tasks that they would need to undertake to comply with the draft standard. One SER told the Panel they supported exemptions for some ESOs, especially for smaller ESOs that operate on little to no budget. Another SER thought that this draft rule would “kill” small fire departments. Furthermore, SERs questioned OSHA’s authority to regulate volunteer responders and to regulate public employees in non-State Plan states.

Some SERs raised concerns that covering volunteer ESOs under this rule would have unintended consequences that would leave some volunteer responders less protected. Those SERs worried that states that currently consider volunteer responders to be employees may reclassify volunteers as nonemployees thus removing some existing workplace protections afforded those volunteers.

In general, SERs did not offer any recommendations on what they would consider to be an appropriate cut off point to determine who should be covered by all the provisions of an emergency response standard. SERs did not endorse any measure of population served, number of responders, or number of calls responded to that they felt represented a reasonable place to draw the line between who should be covered by all the provisions of a potential emergency response standard and who should not be covered. Nor did they identify any specific provisions from which to exclude volunteers. One SER pointed out that an ESO may have one paid employee and the rest of the responders are volunteers. This SER was unsure whether these ESOs would be considered volunteer ESOs or not and said that there is such great variation in how ESOs are organized that it is difficult to draw lines for excluding some ESOs.

Further complicating this issue, as OSHA noted in the PIRFA, is the intersection of OSHA State Plan states and state-level definitions for who is considered a volunteer. One SER correctly pointed out that the draft standard, if promulgated, would not cover state, local, and municipal employees in non-State Plan states, meaning that only roughly half of responders would be covered. As previously noted, one SER questioned whether OSHA had the authority to regulate volunteer ESOs. OSHA acknowledged that this was a difficult legal question that merits further investigation, but indicated that the rules defining an employee vary by state and that even minimal levels of compensation may, in some cases, change the classification of a volunteer responder into an employee. Along these lines, one SER told the Panel that volunteer responders in their state are paid a \$585 stipend annually.

Another recurring theme many ESO SERs raised was the issue of the aging of volunteer firefighters. This was raised both in relation to the cost of complying with certain provisions, such as medical and fitness requirements, but also as a concern about feasibility, given the potential that a critical cohort of volunteers would not be able to meet the medical and fitness requirements of the draft standard and would be ineligible to serve as volunteer responders. This would further strain ESOs because, the SERs told the Panel, they are having difficulty finding new volunteers to join the ESOs.

In addition to the financial costs of the potential standard for volunteer ESOs, some SERs were concerned that the new requirements would place a greater burden on volunteer responder's time. Since volunteer responders are not compensated for the time they spend engaged in ESO-related activities, introducing additional requirements like additional training, fitness requirements, recordkeeping, and other activities would be completed on volunteer responder's personal time. SERs were concerned that this would make it more difficult to recruit and retain volunteer responders.

A common concern among SERs was that given the limited resources of many volunteer fire departments, this standard, if promulgated, would force small ESOs to close. A number of SERs said they anticipated the financial costs would be unmanageable. One SER indicated that they anticipated that this rule would close three firehouses in their community and that if that

happened, the closest remaining department would be 30 minutes away placing residents and property at greater risk if there was a fire.

Industrial Fire Brigades

Some SERs thought that it would be a mistake to create a standard that covered both industrial fire brigades and other types of ESOs. SERs thought these types of activities were too dissimilar to be covered in one standard and that the requirements for other types of ESOs were not necessary for industrial fire brigades. One SER was concerned that, if industrial fire brigades were required to follow the draft regulation, companies would simply disband their fire brigades and instead rely on 911 and local municipal responders. This would increase response times and increase the burden on the already strained local ESOs. Another SER echoed this concern in their written comments, writing:

It is our belief that if industrial fire brigades are included in the OSHA [draft regulation] and they find the regulations unmanageable that they will close their plant fire brigades and call the local Volunteer Fire Departments to come to the factory when it is on fire and burning down.

This OSHA [draft regulation] has the potential for increasing the risk to our Volunteer Firefighters of death and dismemberment due to the many chemicals and specialized equipment used in the manufacturing process that we have no knowledge of, but will be required to respond to. We would need specialized training and equipment to respond to these emergencies. The net result will be increased cost and overworked firefighters who are now stretched thin doing their regular job without taking on the additional burden of a chemical or manufacturing facility.

Another SER reported that their chemical company no longer had a fire brigade due to the cost and requirements in OSHA's existing standard for industrial fire brigades.

Skilled Support Employers (SSE)

SERs were in general agreement that most of the provisions governing skilled support in the draft standard were either unnecessary and/or counterproductive. A number of SERs, however, felt that some cross training was beneficial for all parties. Some ESO SERs reported that they rely on the expertise of the Skilled Support Workers (SSW) to operate safely at an emergency scene. Many ESO SERs felt that the requirements of the draft standard would amount to them telling SSWs how to perform their jobs. They generally agreed that it is best that the SSW be trusted to perform their tasks safely at the scene of an emergency incident without interference from the ESOs.

The nature of skilled support, broadly defined, can take many forms. SERs on the panel included towing and crane operations, as well as electric utilities. In some cases, the skilled support

supplier may provide services that are integral to fire-fighting operation, such as providing tanker trucks where the fire may be remote from available water supplies or using farm equipment to cut fire lines for wildland firefighting. One ESO SER told the Panel that skilled support providers are dispatched to the emergency scene along with emergency responders in order to shorten the time that it takes to provide emergency services. This allows service to be provided more quickly since it does not rely on the emergency responders arriving at the scene first before calling for help from SSEs.

Skilled support SERs reported being covered by other OSHA standards (including OSHA's Crane standard and the Electric Power Generation, Transmission and Distribution standard) and by Department of Transportation standards. Skilled support SERs generally agreed that working on an emergency scene involved the same tasks as other job sites. Because these SERs are covered by other standards, they saw their inclusion under the emergency response standard as unnecessary. One SER said while they would largely work in the same manner in an emergency incident as in a routine non-emergency incident, they might operate more cautiously and watch their footing more closely. This SER also said that lighting can sometimes be an issue at emergency scenes.

SERs representing electric utilities told the Panel that they did not think they should be included in an emergency response standard. These SERs said their employees did not enter dangerous areas at emergency scenes and that, if necessary, they would access an upstream device to isolate electrical sources to the larger area. ESO SERs agreed that their interaction with electric utilities was limited, that they were on the scene of an emergency only briefly, and that the ESOs did not ask or expect the electric utilities to enter a dangerous area at the scene of the emergency incident.

SERs worried that many SSEs would have difficulty fulfilling the requirements of the draft standard including the medical and fitness, planning, and training provisions. The Panel also heard that skilled support services are rarely used at emergency scenes. Given the infrequency of the use of skilled support and the stringency of the requirements for those employers, SERs believed that many skilled support providers would no longer be willing to provide their services during emergency response activities. SERs worried that this would lead to delays in responding as it would be more difficult to find a skilled support provider when one is needed, and the closest providers may not be willing or able to assist. One ESO SER told the Panel that their organization would not be able to provide in-house all of the services skilled support providers do. This SER reported that they relied on the SSEs and did not want to lose access to these services if SSEs were no longer able or willing to provide assistance due to the draft standard's additional compliance requirements.

The SERs noted that while there may be several calls a year for various services, such as towing services, these are typically not "emergency" situations as identified in the draft standard. These skilled support SERs were more likely to assist after the emergency was over. Hence, such

activity would not be covered by the draft standard. Some ESOs said they called for skilled support only a few times per year and skilled support SERs reported responding to emergencies once a year or less. Skilled support SERs also felt that their response at emergency scenes did not place them at a greater risk of injury or death than their normal activities did.

One SER commented on the relationship between the incident commander and the SSW and questioned the SSE's obligation to comply with the rule versus the responsibility of the ESO to ensure the SSW complied with the rule.

Some SERs noted that some pre-incident familiarization and coordination between ESOs and SSEs is useful for improving safety and efficiency at an emergency scene.

Other Comments on Skilled Support Employer provisions

The SERs discussed the skilled support provisions in depth. While the most prevalent sentiment shared was to remove SSEs from the scope of a proposed standard, the SERs also commented on several aspects of the draft provisions pertaining to SSEs.

Formal Agreements Between ESOs and SSEs

Some SERs indicated that, at least for smaller, volunteer fire departments, formal agreements with skilled support suppliers may infrequently be present in some situations but did not appear to be the norm. Frequently the SERs indicated that their ESOs lack the economies of scale for such arrangements, both in terms of personnel to negotiate and formalize such arrangements, and the demand for services. One SER felt that requiring formal agreements would be burdensome for ESOs while another SER felt that formal agreements might limit the pool of available providers to only larger establishments that had enough staff to allow them to negotiate these formal agreements. SERs reported that arrangements with skilled support suppliers are commonly more informal, such as having an "emergency list" of phone numbers or approved vendors, or simply knowing people on an informal basis in the community. In some cases, there may be a virtual local monopoly in some areas of skilled support, or in the case of electric utilities, there is only one provider that can modify the distribution system, isolate hazards, or operate equipment. In some cases, the support does not come in the form of a business arrangement; it was indicated that in rural agricultural areas it was common that local farmers may volunteer some of their equipment on an ad hoc basis.

Skilled Support: Personal Protective Equipment (PPE)

SERs generally agreed that SSEs did not need additional emergency response-specific PPE when responding to emergency incidents. SERs indicated that, even at emergency incidents, SSEs generally would need only the PPE they normally would use on any job. One skilled support SER said they have fire resistant clothing and high visibility clothing that they would wear when working with utilities or dealing with road hazards. That SER said that in rare instances, the

police or fire departments they are assisting may give them reflective straps to help increase visibility. That SER also indicated that they would be willing to put together PPE “grab bags” for their employees if they had guidance on what PPE was necessary. ESO SERs told the Panel that they would not ask an SSE to work in an area that would expose them to hazards that would require specialized PPE. One skilled support SER recounted a situation where they and other skilled support providers were assisting with a wildfire situation and were provided with PPE by responding ESOs. However, this did not seem to be a routine occurrence.

SERs indicated that while they typically provide employees some PPE, such practices currently operate somewhat independently of the ESOs, but may involve some coordination. A SER representing a SSE indicated a lack of training and cross education on PPE. They said that they have fire resistant clothing, but they do not know if that is relevant for arc flash versus live fires. That SER said they typically wear work clothes with a reflective vest. This SER suggested that police or fire responders could provide reflective straps to SSWs to increase their visibility at an emergency scene and thus improve SSW safety. This SER also requested that there be a checklist of PPE that skilled support workers should carry, saying they would invest in grab bags for employees that contained the required PPE. Another skilled support SER, representing an electric company, said they carried the PPE they needed for any of the situations that they would respond to, including reflective and fire-related clothing. That SER noted that they do not believe there is additional PPE that would be required for their workers since they would not be exposed to any fire situation.

A SER representing a fire department commented that they would not ask a skilled support employer to provide turnout gear (firefighting equipment) because it is not their area of expertise, and they would feel uncomfortable asking them to perform tasks for which they did not have the appropriate PPE. A SER representing a skilled support towing company said that even he has employees that do not wear safety vests, but he encourages wearing them. That SER has even offered to buy safety vests for other towing companies, but he does not know how to make people wear them. One SER representing a fire department noted that they work with the local gas company to wear PPE on incidents, and that they coordinate locally with their responders. The SER said their PPE is their responsibility and that they supply their own. A SER representing a different fire department said they have two rural electric companies that they can call, that the electric companies have asked to borrow PPE in the past, and that the fire department did not mind. One ESO SER reported that they had met with the local gas company to remind them of the PPE requirements but said that it is that company’s responsibility to provide their employees with PPE and not the ESO’s responsibility.

Skilled Support: Medical Evaluation and Physical Fitness Requirements

Some skilled support SERs reminded the Panel that where the SSEs have a commercial driver’s license (CDL) they are required to pass a physical examination. SERs indicated that it is not a stringent physical exam, and felt that if SSEs had to comply with a more extensive physical, it

would limit the ability for some providers to provide skilled support services. One SER representing an electric utility said that their operators needed to be under a certain weight to be safely lifted in a bucket truck but that, along with the CDL physical, were the only health and fitness requirements applicable to its employees. This SER felt that these requirements adequately protected their workers. A few SERs suggested that technical skill was more important than physical fitness for SSWs and that a highly skilled driver or crane operator who is not physically fit may be preferable to a less skilled but more physically fit SSW. One SER said that they had never had an experience where physical fitness caused a problem for SSWs and that any injuries were consistent with what is regularly seen in the construction industry. This SER suggested that there might be some self-selection towards SSWs that are more physically fit since they saw those employees as the ones that are more responsive and more likely to be asked to assist in an emergency incident.

Skilled support SERs generally did not see much added risk to SSWs due to a lack of physical fitness. SERs reported that the activities SSWs undertake at emergency scenes are not significantly different from any day-to-day operations but that emergency incidents may cause additional emotional stress and fatigue. However, one SER pointed out that workers in their industry are familiar with fatigue because they work different shifts and felt that the fatigue management processes suggested in the draft regulation would be helpful to include on a voluntary basis.

Cross Training Between SSEs and ESOs

Some SERs thought it would be helpful to have pre-incident training or coordination between skilled support providers and ESOs. One skilled support SER thought this would be helpful for their employees and prepare them for what to expect when they arrive at an emergency scene – SSEs should know the point of contact on the site, the additional hazards, and the structure of command at that emergency scene. Another SER thought the minimum training or familiarization requirements should be left up to the ESO and that if the ESO was going to use skilled support services, they should plan and initiate any cross training. One SER agreed that it would be helpful if skilled support providers had knowledge of the incident command system and supported getting together with SSEs for this type of cross training but felt that it might be difficult to achieve. This SER also told the Panel that in their small community, they regularly run into the skilled support providers they work with and have informal discussions on their respective activities.

One SER representing an electric utility mentioned that they had provided cross training to fire departments and trained them on electrical distribution equipment. This SER has trained responders on what a power pole is, what equipment is on it, what part is energized, and what parts are not. This SER said that it was important for fire or EMS to be familiar with the hazards when they approach an emergency scene involving electrical equipment.

One SER felt that cross training with ESOs and SSEs would be beneficial in informing ESOs on how SSEs can assist. This SER recalled a situation where their help as a crane operator was refused by an ESO at an emergency scene. In this case, this refusal may have contributed to the demise of the accident victim. This SER thought that cross training would have helped since the ESO would have known how a skilled support provider could help in an emergency.

One SER suggested that OSHA ask industry associations to provide a list of what hazards to look for when responding to an emergency incident.

Emergency Service Organization PPE

Commenters, particularly from volunteer fire departments, expressed concern that PPE requirements in an OSHA standard based on existing NFPA standards would be expensive and challenging to meet.

One commenter thought that the fire departments could comply with the PPE requirements from a technical standpoint, noting that most fire departments would have a difficult time finding new equipment that did not meet NFPA standards.

Several other SERs, however, commented that the standards would be challenging from an economic standpoint in that they would have difficulty replacing equipment every ten years; others indicated that such a requirement is simply a waste of resources. Some SERs commented that they did not respond to enough calls a year to wear out their turnout gear. Many SERs suggested that there should be a better basis to require replacement of PPE that could rely on testing or inspections of the equipment to determine its fitness for service.

One SER commented that they are throwing away gear that still seems to be in good condition, noting that they also wear their gear when responding to calls that do not put wear and tear on the PPE. One SER said that they use their out-of-date PPE for training purposes, while another SER said that they donate their outdated PPE gear to Nicaragua because it is no longer allowed for use in the U.S. Another SER commented that if they do not donate their old PPE to volunteer fire departments with low budgets, then those ESOs may not have any PPE at all.

One SER noted that in New York City, many departments wear out gear in five years, but that the life of the PPE depends on use. That SER said that the ten-year turnover for PPE is not reasonable for volunteer fire departments because they do not respond to many alarms and therefore their PPE experiences less wear and tear. Another SER said that their turn-out gear does not wear out in ten years as long as the PPE is taken care of correctly. That SER noted that they had a large donation from a larger ESO of several sets of turnout gear that had never been taken out of the packaging but, because the gear expired in only six months, the larger ESO had chosen to replace it.

Another SER made a distinction between bigger departments and smaller volunteer departments noting that their small department only goes on five to ten calls per week and suggested that there should be some way that equipment could be tested to determine the appropriate replacement time. Because this SER's PPE is not as stressed as equipment at a department that might go on fifteen calls per day, the SER's PPE should last longer.

One SER commented that one set of turnout gear and helmets, without boots, hoods, or gloves, would cost \$3,250; and that it would cost about \$60,000 to equip the 19 responders at their ESO. This SER notes that the cost under the proposal would actually total about \$120,000 because two sets of PPE would be required for each responder, and that the cost is equivalent to two years of revenue. (OSHA notes that "two sets" is not a requirement proposed in the draft regulation. It is a recommendation in the NFPA standard to have a spare set available while the other set is being cleaned/decontaminated. It is not an NFPA "requirement.") Another SER, representing a small volunteer fire department, affirmed that the cost to replace PPE for their 35 people would be over \$100,000; and that under NFPA standards, they would have gear that is in good condition, without cuts or discolorations from burns, that they would have to discard after 10 years despite their low call volume. One SER noted that it cost the county (containing multiple local fire departments) over \$2 million per year to cover 500 career members. Another SER commented that they estimated a cost of \$2,500 - \$3,000 per set of turnout gear due to each set needing to be custom fitted to the responder.

Clarence Jewell, a SER representing Libertytown Volunteer Fire Department, submitted in written comments that the Fire Act Grant is presently available for purchases of PPE, but the funds are limited and often a target of budget cuts. Mr. Jewell said that many small departments do not have the financial ability to replace gear every ten years, and that some of them rarely see interior firefighting. Mr. Jewell said that even a large department would have a hard time finding funds for two sets of PPE per responder every 10 years.

Bill Betts, a SER that is a past Chief, current Safety Officer, and National Volunteer Fire Council Board Member from Frederica Volunteer Fire Company in Frederica, Delaware, submitted in written comments that a set of PPE costs over \$3,000 per firefighter, and that his ESO just spent \$243,000 on new SCBA based on the life cycles determined by NFPA. Mr. Betts noted that the 12 working fires that his department responded to in the last year does not compare to the level of activity that fire departments in large cities experience, who are the intended targets of the NFPA life cycle for PPE.

Training

Many SERs were concerned that the training required by the draft standard would be too time intensive for them to accomplish. SERs representing volunteer ESOs felt that it would be extremely difficult to get volunteer responders to complete the full NFPA firefighter training. Since volunteer responders are not receiving hourly compensation, they would need to complete

their training around their regular job and life responsibilities that SERs representing volunteer ESOs felt would be too burdensome and discourage potential volunteers from joining.

Some SERs reported that their volunteers received NFPA Fire Fighter 1 and 2 training and some SERs reported that training is provided at no cost through local fire academies or community colleges. SERs reported varying degrees of training currently, depending on the level of external support they received, from either the local, state, or sometimes Federal funding, as well as the various state requirements they currently need to meet. But there was broad agreement that raising the training requirements significantly from their current level would be difficult.

One SER reported that the state of Minnesota currently requires 144 hours of total training for Fire Fighter 1 and Fire Fighter 2. Comparing that with the alternatives put forward in the PIRFA and Issues documents, that SER indicated that that amount of training would be comparable to the amount of training specified in Alternative 8, as opposed to the 355 hours estimated to be required for a typical responder in the PIRFA. This SER indicated they started their own fire academy to bring firefighters up to current Minnesota requirements, which includes both online content and 40 hours of practical, hands-on training. While career responders in their department tend to have 80-100 more hours of training a year than volunteers, that SER indicated it would be “virtually impossible” to jump to 355 hours for volunteer responders. That SER indicated their current volunteer responders would likely quit rather than take extra training on their own time and that it would be impossible to recruit new volunteers if they were required to undertake 355 hours of training.

Another SER indicated that money for training is not a significant problem for their ESO in Pennsylvania. Training, they reported, is provided at no cost for county and state departments, and the state has their own training facility. This SER agreed that all firefighters should complete Fire Fighter 1 training within the first year. The SER told the Panel that the time commitment is the main limiting factor in getting volunteer responders to take additional training. That SER indicated that getting someone in their 30s or 40s to start a career in firefighting is almost unheard of because of the time commitment, given other life obligations.

A SER from New York State indicated they were only 26 miles from the state fire academy, which provides free classes and has a good outreach program. Therefore, it was not difficult, in theory, for their responders to get exterior training and Interior Fire Fighter 1 and 2 training, along with the possibility of training in specialties. However, this SER indicated that while availability of training is not an issue, the availability of firefighter time was.

Another SER indicated that training was a particular problem for volunteer fire departments. They indicated that currently in some parts of the country volunteer fire departments are consolidating due to the lack of volunteers. He believed that if a requirement for 355 hours was instituted, volunteer fire departments would cease to exist. That SER thought that they could

raise the money to provide training, but that their ESO would not be able to find the people willing to make the time to complete the training.

Medical, Health, and Fitness

Medical Screening

The Panel asked the SERs what they currently require from members as far as medical screening and tests. One SER said that his organization includes all the chemical operators and industrial fire brigade members that volunteer in medical screenings because of potential exposures, and that the medical screening includes EKGs, bloodwork, audio metric, respiratory clearance, and fitness testing. This SER expressed concern about references in the draft standard for evaluations on post exposure cases. Another SER said that they did think some testing was necessary for emergency responders. That SER mentioned that they received spirometry testing every year and typically, an EKG and that they were working with the union to include a chest x-ray every 5 years for their employees. One SER mentioned that some ESOs are operating on an annual budget of \$10,000 – \$15,000 and therefore cannot afford to do a full medical screening but they might be able to get a local doctor to come in and get baseline vitals. This SER indicated that their ESO had a better budget and provided the full NFPA recommended exam on career responders. That SER reported that other responders have less frequent physicals and offered that young people will get initial exams, and perhaps wait 3 – 5 years for their next exam.

Almost all of the SERs expressed concern about the high cost of the medical exams and evaluations identified in the NFPA standard referenced in OSHA’s draft regulatory text. Many SERs were supportive of emergency responders receiving at least some medical screening and evaluation. One SER stated that some requirements, which the NFPA standard identifies, would be unnecessary and would add substantial costs to his organization. Another SER said that they do physicals for all employees and have job performance evaluations annually. He stated that they spend \$600 per firefighter per year on physicals and if a stress test is needed, spend an additional \$195. One SER told the Panel that in their area, an occupational health exam is \$880 if there are no extra tests. This SER reminded the Panel that access can be an issue and that in their rural area, responders would only be able to access some of the needed tests by plane. In written comments, one SER said that, because volunteer firefighters tend to be older, “medical physicals could easily cost \$1,000 per person.”

At the same time, SERs expressed concerns about the amount of time it would take and other unexpected costs of the exams, particularly among smaller volunteer ESOs. Some indicated that, particularly in rural areas, OSHA had not adequately accounted for the time to travel to a location capable of providing all the elements of the exam, as there were no providers locally that would be capable of providing that level of medical evaluation. One SER, whose ESO provided medical screening as recommended by the NFPA, reported that a colleague’s medical condition that could have increased their risk of experiencing a personal medical emergency

during emergency response operations was uncovered during routine screening provided by their ESO. This SER also acknowledged that their ESO received funding from the county that allowed for more extensive medical screenings than may be available to smaller ESOs that operate on donations. One SER told the Panel that they contract a medical service provider who visits the ESO's facility with a trailer and provides all medical screening services at that time. Some SERs said that not all of the medical exams and evaluations recommended by the NFPA were appropriate for all of their responders because some did not perform physically stressful tasks. One SER felt that HIV screenings were not appropriate for emergency responders. However, SERs did not otherwise offer any clear indication regarding which medical screening tests should be retained and which were less crucial for maintaining a healthy workforce.

Fitness for Duty/Physical Fitness

Many SERs were concerned that the physical fitness for duty requirements would be difficult for responders, especially volunteer responders, to meet. SERs communicated concerns about costs and the time commitment required to fulfill medical exams and exercise. Other SERs also had concerns about their and other departments' ability to attract and retain volunteers with new medical and physical fitness requirements. A few SERs said that as conditions are currently, they struggle to attract and retain members; and they are concerned that further requirements will exacerbate the situation. Only a few SERs said that they had physical fitness requirements for their members to fulfill before they are hired. Some requirements for fitness for duty were the ability to drag 150 pounds and the ability to lift 80 pounds over their head. However, the SER who reported those fitness for duty requirements also said that their organization does not have a requirement for BMI or weight. One SER summed this up in their written comments, writing:

Pre-employment or member testing and fit for duty evaluations would not only be time consuming, but also a deterrent to potential new and incumbent members. Our nation is suffering with a decrease in volunteer participation in fire and EMS. Many volunteer companies are struggling to recruit and retain volunteers, adding more time to what is often an already somewhat burdensome process will pose another barrier to keeping members on the rolls or convincing the public to join their local fire department. Though most companies do provide some basic form of evaluations for fitness for new operational, to mandate a specific regiment as outlined by NFPA 1583 would be time consuming and burdensome, ultimately defeating the purpose.

Some SERs representing volunteer ESOs reported that they had no physical fitness requirements and welcomed volunteers of all fitness levels. SERs were concerned that if responders needed to meet physical fitness requirements, many would not be able to do so and would therefore no longer be eligible to serve as volunteer responders. SERs believed they would lose a significant portion of their volunteers if OSHA included physical fitness requirements in a potential standard.

SERs also reminded the Panel that responders, especially volunteers, skewed towards older individuals. One SER highlighted that these volunteers are leaving the industry and it would be a great loss to lose them at a faster rate. More seasoned volunteers are valuable to their organizations because they train the younger members. The SERs felt that these older individuals would not be able to meet physical fitness requirements.

Many SERs were also concerned that they would be unable to provide for or enforce requirements for exercise training. While some SERs reported that they have fitness equipment available or provided gym memberships to responders, others reported that they did not have equipment or space in their facility to put equipment. Furthermore, they did not have fitness facilities available in their community or felt they could not afford to provide memberships to their responders. In written comments, one SER told the Panel:

In our fire station and many fire stations across this great state we simply just don't have space in the existing fire station to setup a work out area. The space just doesn't exist so how are we to make this happen in a cost effective manner. Outside gym memberships cost money and that is money we just don't have.

One SER mentioned that they had an agreement to use the gym facilities of a local school, but with the COVID-19 pandemic, their members had not been able to access it because schools were closed. Some SERs felt it would be difficult to require responders to engage in exercise activities since this would need to be done during a responder's personal time. While some SERs were critical of fitness requirements, others acknowledged that heart attacks are a leading cause of firefighter fatalities and that improved physical fitness could help mitigate the risk of heart attacks. One SER questioned the necessity for a health and fitness coordinator and reported that they did not have anyone on staff who they thought could fill that role. Some SERs questioned the necessity and benefit of fitness related recordkeeping and the ability of their ESO to maintain records in a confidential manner, particularly in volunteer ESOs.

Behavioral Health

The majority of SERs reported that they believed that behavioral health support is an important component of responder wellness. Some SERs told the Panel that they had colleagues who had died by suicide. Some SERs said that they provided access to employee assistance programs or similar services although some SERs noted that, even though they had these services available, no responders had taken advantage of the programs. One SER specified that their employee assistance program included five free counseling sessions. Another SER told the Panel that the employee access program cost \$50 per paid responder and \$19.95 per volunteer. Some reported that they used peer-to-peer support, while other SERs said they held informal debriefings after difficult events. One SER said that their county has critical stress debriefing training set up and if responders respond to a large incident or an incident with traumatic events, those trained personnel may come to debrief the responders involved. One SER who reported having peer

support teams also said that there were additional services available through their insurance carrier. Some SERs said that problems can arise from a totality of events rather than as a direct result of one traumatic event. Significantly, a number of SERs reminded the Panel that in the small communities where they serve, their responders regularly respond to emergencies involving acquaintances, which can make it more difficult to detach from the situation than in those situations that involve strangers. Although SERs generally supported behavioral health and wellness requirements, some were concerned about how to implement these services, how much they would cost, and whether there were privacy issues that needed to be considered. Some SERs mentioned that they found it difficult to find mental health providers that could address the unique needs of first responders.

Good Samaritans and Spontaneous Unaffiliated Volunteers (SUV)

When asked by the Panel, SERs reported that dealing with Good Samaritans and SUVs is not a problem they encountered. While a few SERs said they might accept the help of some SUVs to operate in safe areas, most said that local law enforcement accompanied responders on the scene and kept the scene clear of SUVs who might put themselves in harm's way or make the situation more dangerous for responders.

For example, one SER indicated that in larger, more complex incidents there might be someone from their organization or law enforcement to keep a perimeter. Sometimes people would offer food and other help, but responders would not allow these non-responders in a hot zone or in proximity to other dangers. Occasionally, someone might have special tools or skills and be allowed to assist on a case-by-case basis.

NFPA Standards

Many SERs were concerned with OSHA's extensive use of NFPA consensus standards in the development of the draft regulation, and the incorporation by reference of certain NFPA standards. Several SERs commented that NFPA represents the "gold standard," and is, in their view, primarily developed by manufacturers. (OSHA notes that NFPA strives to maintain a balance of interests in its standards development committees; including manufacturers, users, labor representatives, enforcers, consumers, special experts, and more.) Many SERs expressed that ESOs in large metropolitan areas were capable of adhering to NFPA standards, but small and volunteer departments find them prohibitive. SERs expressed difficulty with the financial and time commitments needed to comply, saying they would put small and volunteer ESOs out of business, leaving large gaps in community emergency response protection. One SER stated that NFPA calls for a stress test with ultrasound as part of the medical evaluation, which adds a significant cost. Another SER mentioned that NFPA requires two sets of gear, which his organization is not able to provide. (As OSHA noted above, "two sets" is an NFPA recommendation, not a requirement.) SERs expressed particular concern about the need to

replace barely used PPE and emergency response vehicles, due to reaching the replacement periods specified in NFPA standards.

Emergency Medical Services

Several SERs were directly associated with emergency medical ESOs. Several more had experience with fire departments overseeing EMS operations. Their comments were typically aligned with the fire department ESOs, particularly as it affected smaller, more rural operations. A common theme was the difficulty of hiring and retaining occupationally qualified personnel.

One SER indicated that some of the practical challenges of running such operations were similar to running fire departments. This SER indicated they have part time employees running ambulances, about 700 runs per year, which costs them approximately \$100,000. This SER indicated that in Delaware, at least, there is a worsening EMT shortage, where they are competing with neighboring jurisdictions for people. Recruitment and retention issues seem common everywhere.

Another SER, representing an all-volunteer ESO, stated they had no current medical or fitness requirements. Regarding personnel, they indicated that often after only two conversations with potential volunteers, the individual will start wavering due to the time commitment and training obligations. They must ensure responders have training completed within the first year, including Fire Fighter 1, EMR or EMT. One SER indicated they went through the draft standard and estimated that they would lose 19 responders from their ESO due to the requirements in the draft standard. That SER further stated that they had been fortunate to receive donated exercise equipment, but use is currently voluntary; they knew of only two members using the facility. The SER also reminded the Panel that, as a volunteer, when not at the station, they must use their own time to do existing paperwork.

Another SER, representing an EMS ESO, indicated setting minimum responder standards for medical and fitness is a dilemma, because while they would support a minimum standard, they are already one-third short of their ideal full-time staff, and no one is applying to fill the vacancies. As a practical matter, that SER told the Panel, if an applicant who meets the qualifications applies, they would hire them because of the need and deal with health issues later.

Another SER from a combination department running EMS as part of fire department is an inherent financial challenge, even in a growing department. This SER indicated that with 50 members and seven career staff their ESO responds to 600-650 calls annually, 80 percent being medical related. This SER said that, while it is possible to do ambulance billing, any reimbursement typically never covers the true cost of service. This SER also indicated their tax base is limited as approximately half of the land in the area is non-taxable, due to tax-exempt organizations, colleges, or state-run establishments. For this ESO, even relatively small increases in expenses are noticeable.

Unified Command Structure

More than the other elements of the draft standard, there was general support among the SERs for a unified command structure requirement. SERs found it to be a useful operational principle, even if it was not currently being implemented perfectly in all situations.

One SER indicated they currently struggled trying to achieve a unified command structure particularly if they are in a mutual aid situation, because everyone is subordinate to their own chief. The same SER indicated that having a unified command structure is an important part of the emergency response system, stressing the importance of accountability, so that everyone knows the key players and that no one is freelancing or putting themselves in danger by doing something that contradicts what someone else is doing. The SERs commented that, from their experience, they found that calls on the interstate were typically good examples of a successful unified command structure.

Another SER agreed, indicating that it is one area that should be part of a standard. In everything from a single medical event to a multi operational period incident it is imperative that, as others stated, there is coordination of all resources throughout the event and most importantly accountability. This SER indicated this is important even in non-emergencies. A SER from a private ambulance service agreed, indicated that they follow a unified command structure currently and it should be written into an emergency response plan.

A SER with experience in both volunteer fire departments and industrial fire brigades indicated they had used the unified command structure successfully because of prior cross-training and information sharing. This SER noted that they try to incorporate an owner, or general manager, from industry so they understand who to go to and know who various people are. This SER indicated that this has been very successful for their ESO. That SER went on to explain that the owner or general manager know their operation and are in the best position to inform responders of areas of concern. That SER said that they want industry to know how the fire department operates and bring folks from industry in to train with the department. That SER reported that there is not any animosity between parties. The SER said that having everyone get together and follow the unified command structure enhances safety when responding to fires or other incidents. Other SERs representing fire departments expressed agreement with this SERs assessment, with one SER noting that they participate in Local Emergency Planning Committee (LEPC) drills annually.

Another SER added that they practice a unified command structure drill with the health department, industry, and law enforcement, annually. That SER noted the importance of including law enforcement because, in their opinion, law enforcement officers are used to acting independently, instead of on a team like the members of the fire department do. That SER has been conducting this drill with law enforcement for a decade and said that law enforcement also invites them to active shooter training because of the importance in training to follow a unified command structure. Another SER agreed that group drills and training incorporating a unified

command structure were critical in relationships with law enforcement because they, as this SER has observed, tend to work autonomously in an emergency event.

Planning

Some SERs reported to the Panel that they felt the requirements for various written plans were overly burdensome and would not improve responder safety. One SER said that they did not think that small or rural departments would be able to develop the written plans as required by the draft standard. Some SERs were concerned that, where responders were all volunteers, it would be difficult at best for a volunteer ESO chief to complete the necessary written plans while responding to emergencies and attending to their occupational and life responsibilities. One SER told the Panel that it takes 5-8 hours for each location to add any new hazards that not currently covered by their existing plan. This SER said that 300 to 350 hours are invested every year for planning. Another SER told the Panel that they thought that pre-incident planning was important, that it represented an area where ESOs could improve, and that these improvements would benefit ESOs and responders. This SER felt that risk assessments were less useful.

Some SERs believed that they would need to hire paid clerical staff to handle the paperwork duties in the draft regulatory text and these hires, if necessary, would account for a substantial portion of their operating budget. Speaking of the various planning requirements of the draft standard in their written comments, one SER stated:

We currently do not have the personnel in our fire district that have the capabilities of managing this program for us so that means we either have to hire an outside agency to administer it or hire 1 to 2 paid employees + benefits as employees of the fire district.

Some SERs reported that they would need to hire one or two full time staff at a loaded wage (wages plus benefits) of around \$100,000 per year. Those SERs and their ESOs operated on budgets of between \$300,000 and \$700,000 per year.

Scalability

SERs expressed concern that the potential standard is a “one size fits all” document and that it is unrealistic to expect small and volunteer ESOs to comply with all of the requirements. One SER stated that everything down to their gear is required and for his organization to be compliant would require funding that they do not have. Another SER brought up the topic of training for foam extinguishing agents. He stated that his organization never works in foam and the standard would require that his organization’s members use training time, which is already difficult to allocate, for training that would not be valuable. The draft standard consists of prescriptive requirements in some sections, while most of the sections have performance-based provisions. Several SERs expressed that performance-based standards are better suited for small and

volunteer ESOs to adapt to their needs. One SER suggested that the size of the population serviced be considered for the purpose of exempting an organization or group of organizations from the standard. One SER suggested OSHA develop a point system based on the level of services and types of risk faced by responders so that ESOs can determine what parts of the standard they would need to follow and how complex their programs needed to be.

Some SERs suggested that any potential standard be scalable and address the hazards faced by various types and sizes of ESOs. One SER suggested that the scope of the rule be based on a combination of community size, whether responders are volunteers or paid, and range of service. One SER suggested that any potential rule should be on a sliding scale based on the risks present for that ESO. Another SER urged OSHA to provide flexibility to the authority having jurisdiction to determine the competencies and qualifications necessary for the type of hazards faced by their ESOs. That SER mentioned that there is only one apartment building in their district and that they also have large areas of grasslands. This SER suggested that it is important that the ESO be able to balance the required training with the types of risks they encounter. SERs also mentioned that large urban areas with dense populations, older construction, and high-rise buildings, need a different level of fire service than small communities and suggested that smaller communities do not need as much regulation as big cities.

Costs and Feasibility

Many SERs were concerned over the cost of the potential standard. While SERs were generally in agreement that the goals of and ideas in the draft standard were commendable and what ESOs should be striving to meet, they also largely reported that they anticipated that compliance would not be feasible given their limited available funding sources. One SER said that they thought it would be nearly impossible for small departments to meet the financial obligations that would be imposed by promulgation of the draft standard. One SER summed this up in their written comments stating that they “fully support and endorse every effort to enhance the health of personnel. However, many, many departments simply cannot afford the financial burden.” Another SER echoed this sentiment in their written comments, writing that ESOs “with less than 50 members are already in the worst situation, but any additional cost or regulation will negatively impact all first response agencies.” Another SER, in their written comments, reminded the Panel that the closure of volunteer ESOs would result “in higher taxes for communities as they contract for career staff fire and EMS protection.” SERs repeatedly told the Panel that they are underfunded or have no dedicated source of funding and instead rely on fundraisers like bingo, barbecues, and chicken dinners. Other SERs reported that they are funded through tax revenue and that their towns or municipalities would need to raise taxes in order to pay any costs related to compliance with this potential standard. One SER said that their town provided \$4,000 per year for fire protection. That SER told the Panel that, in their opinion, the fire service is under-supported compared to law enforcement and other parts of local government and that it would be a challenge for ESOs to implement this potential rule without additional

funding. In written comments, one SER told the Panel that in “New York State we are limited by law to increasing our budget no more than 2% over the previous year’s budget,” which would make it difficult for their ESO to increase their budget to implement this potential rule. That SER continued in their written comments stating that their ESO’s “2022 Estimated Budget Expense’s for the year is \$327,629.00,” but that “this is just about the max our community will allow us . . . because they don’t have any more money to give.” Another SER, in their written comments reminded the Panel that “some volunteer fire departments have an operating budget of less than \$10,000 a year.”

One SER representing an industrial fire brigade estimated that this potential standard could cost another \$100,000 above and beyond what they are currently spending in order to comply with existing related regulations. This SER was especially concerned about planning, equipment preparedness, training, and medical evaluations. This SER specified additional areas that would be troublesome for industrial fire brigades including the addition of drivers into the training program, behavioral health requirements, fitness for duty and exercise training requirements, and additional administration requirements. This SER reported that responders for their fire brigade are assessed for their ability to wear respiratory protection as required in other OSHA standards and told the Panel that they feel that is enough of an assessment of their fitness for duty. This SER said that the program requires an office staff with a high degree of competency to evaluate, add to, and maintain written programs. This SER also told the Panel that they have mutual aid agreements with local ESOs and train together regularly.

4. FINDINGS AND RECOMMENDATIONS

Introduction

The findings and recommendations presented in this report address issues and concerns raised by participating SERs and reflect the Panel’s recommendations with respect to those issues and concerns. Notably, while many standards impact entities of many types, an emergency response standard would be unique in that it would apply in State Plan states to local government entities and in some State Plan states to entities that are operated partly or wholly by volunteers. For that reason, the feedback received in the SBREFA process is a particularly important source of information for this rulemaking process. The Panel’s findings and recommendations are also preliminary, based on information available at the time this report was drafted. OSHA will continue to conduct relevant analyses and may obtain additional information relevant to the rule development process. Any options the Panel identifies for reducing the rule’s regulatory impact on small entities may require further analysis and/or data collection to ensure that the options would be consistent with the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 et. seq., (OSH Act) (the statute authorizing a proposed rule) and adequately protective of workers.

The Panel’s recommendations are consistent with the principles that OSHA must make a threshold showing of significant risk of serious injury or death before it can promulgate a safety

or health standard. It is only after OSHA makes a general finding of significant risk that the analysis turns to whether the requirements of the standard are reasonably related to the standard's purpose and the rule is appropriately tailored. Further, the Regulatory Flexibility Act requires OSHA to consider significant regulatory alternatives that achieve its statutory objectives while minimizing any significant economic impact on small entities.

Scope

Finding: *Small and Volunteer Emergency Service Organizations (ESO)*. ESOs can take various forms, including all volunteer, combined, and all career. There was general agreement among the SERs that the agency should carefully consider whether all the provisions of the draft standard would be appropriate for all ESOs. Many of the SERs expressed concern over the inclusion of small and, in particular, volunteer ESOs within the scope of the rule. As outlined in the PIRFA, most ESOs have a volunteer element; the term “small” here overlaps with volunteer. However, some SERs articulated concerns about the draft rule’s impact on small ESOs without specifying whether they are volunteer, combined or career organizations. With that in mind, the volunteer element seemed to pose particular challenges. SERs repeatedly raised the fact that many volunteer ESOs have no or limited dedicated sources of funding and would, therefore, find it difficult to complete the additional tasks needed to comply with this draft standard. Furthermore, SERs questioned OSHA’s authority to regulate volunteer responders and to regulate public employees in non-State Plan states.

Some SERs raised concerns that covering small or volunteer ESOs under this rule would have unintended consequences that would leave some responders less protected. For example, SERs worried that states that currently consider volunteer responders to be employees may reclassify volunteers as nonemployees thus removing some existing workplace protections afforded those volunteers.

In general, SERs did not offer any recommendations on what they would consider to be an appropriate cut off point to determine who should be covered by all the provisions of an emergency response standard. SERs did not endorse any population served, number of responders, or number of calls responded to that they felt represented a reasonable place to draw the line between who should be covered by all the provisions of a potential emergency response standard and who should not be covered. Nor did they identify any specific provisions from which to exclude volunteers.

Recommendation: The Panel recommends that OSHA thoroughly review and clearly present who is and who is not in the scope of this standard. OSHA should conduct a thorough review to determine which states consider volunteers to be employees who would be covered by this standard and present this analysis as part of the proposed rule.

The Panel further recommends that OSHA thoroughly consider whether volunteers currently covered as employees would be negatively impacted by inclusion in all of the provisions of this rule.

The Panel recommends that OSHA consider the feasibility of implementation for small and volunteer ESOs and review whether exemption from some or all parts of the standard would be appropriate for some or all small or volunteer ESOs.

The Panel recommends that OSHA continue working to identify additional areas where burdens could be reduced or eliminated for small and volunteer ESOs. While this report presents a number of recommendations on specific issues, the Panel believes there are additional areas where OSHA could further tailor the requirements of a proposed rule to reduce the burden on small ESOs.

The Panel recognizes that OSHA must show that a standard is economically feasible as part of the agency's legal requirements but highlights here that it is especially important in this circumstance where infeasibility may affect public safety. There are also additional analytical challenges given that traditional government data sources may not adequately capture the financial situation of volunteer ESOs that rely entirely on donations to fund their operations and that typical methodologies and assumptions used to establish economic feasibility may not be applicable for all-volunteer ESOs that lack a dedicated source of funding. The Panel recommends that OSHA thoroughly consider these unique situations, explain how the economic feasibility analysis took these situations into consideration, and what, if any, adjustments the agency made to the feasibility assessment, including to account for ESOs that are sustained wholly by donations from the community.

Finding: *Skilled Support Employers (SSE)*. Many SERs had a number of concerns about the inclusion of skilled support employers under the scope of the draft standard. OSHA's preliminary inclusion of such entities was based, in part, upon OSHA's intent for ESOs to establish advance agreements with skilled support employers to provide their services at an emergency incident when needed. Thus, employers who agreed to provide skilled support would become aware of their need to comply with the skilled support employer requirements of this standard. The SERs overwhelmingly reported no such formal agreements are currently in place, and that services were procured on an ad hoc basis largely through informal relationships. A number of SERs from rural areas told the Panel that there were only a few employers in their area who could provide skilled support, so they did not have a choice in SSEs. SERs worried that many SSEs would have difficulty fulfilling the requirements of the draft standard including the medical and fitness, planning, and training provisions. The Panel also heard that skilled support services are rarely used at emergency scenes. Some ESOs said they called for skilled support only a few times per year and skilled support SERs reported responding to emergencies once a year or less. While skilled support employers assisted ESOs more frequently than that, their help

was more likely to occur after the emergency was over and such activity would not be covered by this draft standard. Given the infrequency of the use of skilled support and the stringency of the requirements for those employers, SERs believed that many skilled support providers would no longer be willing to provide their services during emergency response activities. SERs worried that this would lead to delays in responding as it would be more difficult to find a skilled support provider when one is needed and the closest providers may not be willing or able to assist. Skilled support SERs also felt that their response at emergency scenes did not place them at a greater risk of injury or death than their normal activities did. These SERs generally reported that they did not need emergency response-specific PPE or specific planning. ESO SERs concurred and told the Panel that they would not ask a skilled support provider to enter a hazardous area that required PPE.

Some SERs noted that some pre-incident familiarization and coordination between ESOs and SSEs is useful for improving safety and efficiency at an emergency scene.

Recommendation: The Panel recommends that OSHA not include skilled support employers in the scope of a proposed Emergency Response standard.

The Panel recommends that OSHA consider whether some minimum level of pre-incident familiarization, training, or coordination requirements for ESOs with respect to use of skilled support services would improve safety and should be included in the requirements of a proposed Emergency Response standard.

Finding: *Workplace Emergency Response Teams.* Some SERs said that workplace emergency response teams (referred to during discussions with SERs and in SERs' written comments as industrial fire brigades) and other types of ESOs should not be covered by the same standard or same set of requirements. SERs said that the response activities performed by these groups were too dissimilar to be covered in one standard and that the requirements for other types of ESOs were not necessary for industrial fire brigades. SERs were concerned that, if workplace emergency response teams were required to follow the draft regulation, companies would simply disband their emergency response teams and instead rely on 911 and local municipal responders. This would increase response times and increase the burden on the already strained local ESOs.

Recommendation: The Panel recommends that OSHA evaluate whether the hazards encountered by workplace emergency response teams are adequately and appropriately addressed by the provisions of the draft standard.

If OSHA finds they are not, the Panel further recommends that OSHA consider developing different requirements for workplace emergency response teams taking into consideration their unique characteristics relative to other ESOs.

Draft Rule Provisions

Finding: *Training.* Many SERs were concerned that the training required by the draft standard would be too time intensive for them to accomplish. SERs representing volunteer ESOs felt that it would be extremely difficult to get volunteer responders to complete the full National Fire Protection Association (NFPA) firefighter training. Since volunteer responders are not receiving hourly compensation, they would need to complete their training around their regular job and life responsibilities that SERs felt would be too burdensome and would discourage potential volunteers from joining. Some SERs reported that their volunteers received NFPA Fire Fighter 1 and 2 training and some SERs reported that training is provided at no cost through local fire academies or community colleges.

Recommendation: OSHA's draft regulatory text does not specify the number of hours of training that responders would need to complete. The Panel recommends that OSHA clarify that the draft standard does not require all responders to complete any set number of hours of training but rather that responders would be trained to a level appropriate for the complexity and requirements of their job duties or activities.

Finding: *Planning.* Some SERs reported to the Panel that they felt the requirements for various written plans were overly burdensome and would not improve responder safety. Some SERs were concerned that, where responders were all volunteers, it would be difficult at best for a volunteer ESO chief to complete the necessary written plans while responding to emergencies and attending to their occupational and life responsibilities. Some SERs believed that they would need to hire paid clerical staff to handle the paperwork duties in the draft regulatory text and these hires, if necessary, would account for a substantial portion of their operating budget.

Recommendation: The Panel recommends that OSHA closely evaluate the various planning requirements and eliminate or reduce those requirements where possible. OSHA should look closely at the labor costs associated with written planning requirements.

If OSHA's analysis determines that some planning requirements are unnecessary or infeasible, the Panel recommends that OSHA remove those entirely.

Where the development and writing of a plan is found to be necessary to protect workers, the Panel recommends that OSHA simplify those requirements to the extent feasible and to make model plans, checklists, and other assistance available to small entities where possible.

Finding: *Physical fitness.* Many SERs were concerned that the physical fitness and fitness for duty requirements would be difficult for responders, especially volunteer responders, to meet. Some SERs representing volunteer ESOs reported that they had no physical fitness requirements and welcomed volunteers of all fitness levels. SERs were concerned that if responders needed to meet physical fitness requirements, many would not be able to do so and would therefore no

longer be eligible to serve as volunteer responders. SERs believed they would lose a significant portion of their volunteers if OSHA included physical fitness requirements in a draft standard. SERs also reminded the Panel that responders, and especially volunteer responders, skewed towards older individuals. The SERs felt that these individuals would not be able to meet physical fitness requirements further reducing the pool of available volunteer responders.

Many SERs were also concerned that they would be unable to provide for or enforce requirements for exercise training. While some SERs reported that they have fitness equipment available or provided gym memberships to responders, others reported that they did not have equipment or space in their facility to put equipment. Furthermore, they did not have fitness facilities available in their community or felt they could not afford to provide memberships to their responders. Some SERs felt it would be difficult to require responders to engage in exercise activities since this would need to be done during a responder's personal time. While some SERs were critical of fitness requirements, others acknowledged that heart attacks are a leading cause of firefighter fatalities and that improved physical fitness could help mitigate the risk of heart attacks. One SER questioned the necessity for a health and fitness coordinator and reported that they did not have anyone on staff who they thought could fill that role. Some SERs questioned the necessity and benefit of fitness related recordkeeping and the ability of their ESO to maintain records in a confidential manner, particularly in volunteer ESOs.

Recommendation: The Panel recommends that OSHA clarify, reduce, or eliminate the requirement for a health and fitness coordinator since the duties of this individual and the benefits they would provide are not clear.

Along with the Panel's other recommendations on recordkeeping, the Panel recommends that OSHA reconsider the necessity of recordkeeping of health and fitness data.

The Panel recommends that OSHA clarify the fitness for duty requirements and determine how to balance requirements that would improve responder safety with the necessity to allow volunteer ESOs and small ESOs of all types to adequately staff their ESO and to provide the necessary services to their constituent communities.

Finding: Behavioral Health. The majority of SERs reported that they believed that behavioral health support is an important component of responder wellness. Some SERs told the Panel that they had colleagues who had died by suicide. Some SERs said that they provided access to employee assistance programs or similar services. Some reported that they used peer-to-peer supports, while other SERs said they held informal debriefings after difficult events. Some SERs said that problems can arise from a totality of events rather than as a direct result of one traumatic event. But a number of SERs reminded the Panel that in the small communities they serve, their responders regularly respond to emergency situations involving acquaintances which can make it more difficult to detach from the situation than when those involved are strangers. Although SERs generally supported behavioral health and wellness requirements, some were

concerned about how to implement these services, how much they would cost, and whether there were privacy issues that needed to be considered. SERs provided some information about the costs associated with behavioral health and wellness programs.

Recommendation: The Panel acknowledges the importance of mental health support for emergency responders. The Panel recommends that OSHA examine the costs and benefits associated with behavioral health and wellness programs as part of its assessment of whether to maintain the requirements for these programs.

The Panel further recommends that OSHA ensure that responder confidentiality is not compromised and that the agency provide additional guidance and clarification on how ESOs can meet any behavioral health and wellness requirements.

Finding: *Good Samaritans and Spontaneous Unaffiliated Volunteers (SUV).* When asked by the Panel, SERs reported that dealing with Good Samaritans and SUVs is not a problem they faced. While a few SERs said they might accept the help of some SUVs to operate in safe areas, most said that local law enforcement accompanied responders on the scene and kept the scene clear of SUVs who might put themselves in harm's way or make the situation more dangerous for responders.

Recommendation: The Panel recommends that, unless the agency finds evidence showing that Good Samaritans and SUVs are exposing responders to an increased risk, OSHA remove the requirements related to Good Samaritans and SUVs.

Finding: *Use of NFPA Consensus Standards.* Many SERs were concerned with OSHA's extensive use of NFPA consensus standards in the development of the draft regulation, and the incorporation by reference of certain NFPA standards. Several SERs commented that NFPA represents the "gold standard," and is, in their view, primarily developed by manufacturers, ESOs in large metropolitan areas, and large influential organizations. SERs expressed difficulty with the financial and time commitments needed to comply with the consensus standards, saying they would put small and volunteer ESOs out of business, thus leaving large gaps in community emergency response protection. SERs generally agreed that the NFPA standards were a good standard to aim to achieve, but that fully complying with the NFPA standards was unrealistic for most small volunteer ESOs. SERs expressed particular concern about the need to replace barely used personal protective equipment and emergency response vehicles, due to reaching the replacement periods specified in NFPA standards.

Recommendation: The Panel recommends that OSHA clarify the use of NFPA provisions in the proposed rule and consider how incorporation by reference could affect small and volunteer ESOs. The agency should look closely at the feasibility of NFPA's recommendations for sun setting/retirement of PPE, vehicles, and equipment.

Finding: *Medical Screening and Evaluation.* Almost all of the SERs expressed concern about the high cost of the medical exams and evaluations identified in the NFPA standard referenced in OSHA’s draft regulatory text. Many SERs were supportive of emergency responders receiving at least some medical screening and evaluation. At the same time, however, they expressed concerns about the amount of time it would take and the cost of the exams, particularly among smaller volunteer ESOs. In addition, some indicated that, particularly in rural areas, OSHA had not adequately accounted for the time to travel to a location capable of providing all the elements of the exam as there were no providers locally that would be capable of providing that level of care. One SER, whose ESO provided medical screening as recommended by the NFPA, reported that a colleague’s medical condition that could have increased their risk of experiencing a personal medical emergency during emergency response operations was uncovered during routine screening provided by their ESO. This SER also acknowledged that their ESO received funding from the county that allowed for more extensive medical screenings than may be available to smaller ESOs that operate on donations. One SER told the Panel that they contract a medical service provider who visits the ESO’s facility with a trailer and provides all medical screening services at that time. Some SERs said that not all of the medical exams and evaluations recommended by the NFPA were appropriate for all of their responders because some did not perform physically stressful tasks. One SER felt that HIV screenings were not appropriate for emergency responders. However, SERs did not otherwise offer any clear indication of which medical screening tests should be retained and which were less crucial for maintaining a healthy workforce.

Recommendation: The Panel recommends that OSHA conduct further research on the necessity and cost effectiveness of the NFPA recommended medical screenings, exams, and evaluations, and the appropriateness of requiring those screenings for responders with various levels of exposure and risk based on their duties and designated tasks.

Finding: *Scalability.* SERs expressed concern that the potential standard is a “one size fits all” document and that it is unrealistic to expect small and volunteer ESOs to comply with all of the requirements. The draft standard consists of prescriptive requirements in some sections, while the majority of the sections have performance-based provisions. Several SERs expressed that performance-based standards are better suited for small and volunteer ESOs to adapt to their needs.

Recommendation: The Panel recommends that OSHA consider replacing prescriptive provisions with performance-based provisions, where practical, and tailor, to the extent possible, certain requirements of this standard for small and volunteer ESOs. OSHA should consider scaling the various analysis, planning, and written plans required by this standard to the size and complexity of the ESO and their operations.

APPENDIX A

Small Business Advocacy Review Panel Staff Representatives for the Potential OSHA Standard on Emergency Response

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Maureen Ruskin	OSHA
Andrew Levinson	OSHA
Bill Hamilton	OSHA
Mark Hagemann	OSHA
Tom Mockler	OSHA
Cherron Cox	OSHA
Adriana Lopez-Menendez	OSHA
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Omar Whitfield	OSHA
Jonathan Horton	OSHA
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Ian Moar	Department of Labor, Office of the Solicitor (DOL SOL)
Lisa Wiles	DOL SOL
Amy Tryon	DOL SOL
Erin Fitzgerald	Department of Labor, Office of the Assistant Secretary for Policy
Elizabeth Ashley	Office of Information and Regulatory Affairs, OMB
Daniel Brown	Office of Advocacy, Small Business Administration

APPENDIX B

List of Small Entity Representatives

Panel 1: October 14, 2021, 1pm

	SER Name	Organization
1	Balletto, Jason	Cromwell Fire District
2	Bradley, Gene	Atchison-Holt Ambulance District
3	Cieslik, John E.	Rochester Fire Department
4	Corderman, Brian	Farmers Cooperative Association
5	Hayes, Ronnie	Leland Fire/Rescue
6	Hoffman, Ed	North Manakto Fire, Minnesota
7	Jewell, Clarence (Chip)	Libertytown Volunteer Fire Department
8	Manna, Matt	Ascensus
9	McCarty, Tom	City of Stillwater, MN
10	Pelna, Stephen	Lewis Environmental, Inc.
11	Wycoff, James	Interlaken Volunteer Fire Department

Panel 2: October 19, 2021, 9am

	SER Name	Organization
1	Allen, Reg	CHS Mobile Integrated HealthCare
2	Banach, Chris	VanDeMark Chemical, Inc.
3	Draper, Jonathan	DanChem
4	Eliff, Tyler	Precision Crane Service of Northern California
5	Moore, Scott	Battlefield Fire District
6	Rozeboom, Jared	Hills Fire Department, Minnesota
7	Mier, Casey Alternate Tom Russo	Lowell Light and Power
8	Wise, RC (Ralph Charles)	Village of Gambier, OH

Panel 3; October 20, 2021, 1pm

	SER Name	Organization
1	Beier, Rick	Thief River Falls Fire Department
2	Betts, Williard (Bill)	Frederica Volunteer Fire Company
3	Carow, Tom	Fincantieri Marinette Marine
4	Denniston, David	Cortlandville Fire Department
5	DuBois, Stephen	BFD Power Services, Inc.
6	Moggio, Anthony	City of Rochester, MI
7	Paananen, David	West Barnstable Fire Department
8	Schaefer, Joshua	Pulver Motor Service LLC - DBA - Pulver Towing
9	Spain, Garry	North Myrtle Beach Fire Rescue

Panel 4: October 21, 2021, 4pm

	SER Name	Organization
1	Jeff Cash	Cherryville Fire Department
2	Archie Dickens	Coast Electric Power Association in Mississippi
3	Monica Filyaw	PolyQuest
4	Lou Garso	Au Sable Forks Fire District
5	Edward Hawthorne	Newark, Texas Volunteer Fire Dept
6	Scott Learned	Steese Volunteer Fire Dept, Inc, Sesawk, Alaska
7	Reid Vaughan	Cuba Fire Department

Appendix C
Emergency Response SBREFA
List of SER Commenters

1. Reid Vaughan
2. William Betts
3. David Denniston
4. David Denniston
5. David Denniston
6. Clarence (Chip) Jewell
7. Louis Garso
8. Reginald Allen

1. Reid Vaughan

OSHA Regulation Response

Statement of Facts

Rural volunteer fire departments provide a critical link to safety and property preservation for the citizens that live in the many small towns and rural areas of the United States. The NFPA research division released a study in 2020 that provided a rather interesting snapshot of the volunteer fire service and the US Fire service as a whole. The study indicates that 64% of the nation's fire service organizations are completely volunteer and only 10% of the nation's fire service is completely career in nature. The remaining portion of the fire service is combination with 1/3 of that group being mostly career and 2/3 of the group being mostly volunteer. The career only agencies protect 68% of the nation's population while the volunteer units protect 32%.

There were two pieces of data from this study that should not be missed (in addition to the data provided above). First, the statistics note that the average age of volunteer firefighters is on the rise from 1997 to present. The smaller the population served the more of the older groups are represented based on the study. It is also clear that a little less than half of the volunteers have more than 10 years of experience and full implementation would remove those officers that are in specific age groups as they would be more than likely not able to meet the health standards. This would have a significant negative impact on the safety of the firefighting force. Second, the report indicates that the volunteer service (or mostly volunteer service) is the vast majority of the fire service for populations of less than 10,000 residents. Likewise, the populations of 25K to 10K are split between the volunteer and career services.¹

The cost expressed in the document for NFPA 1582 physicals and well programs are low based on the research that has been completed locally for FEMA grants. The cost of a physical that will meet the rigor of NFPA 1582 has been researched and averages just over \$700.00 for a rural Alabama county that has access to several large hospitals within an hour or less. The costs of doing these physicals on an annual basis means most volunteer fire departments will be faced with choices such as these below:

- 1) Volunteer Fire Leaders will have to choose which standards and regulations are the list risk not to meet. There is no funding to meet everything so the OSHA requirements can be met at the expense of apparatus replacement, gear replacement, SCBA purchase and training or these things can be purchased on the already slow and piecemeal rate they are at the risk of running afoul of this regulation.
- 2) Volunteer Fire Leaders can attempt to meet the spirit of the regulation and hope that that will be sufficient to provide some protection when an incident occurs that could place them at risk.

¹ <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>

- 3) Volunteer Fire Leaders could abdicate the leadership role as there is too much liability that has been created with the regulations that are well meaning, but completely impossible for small agencies to meet.
- 4) Volunteer Fire Leaders can simply cease to operate and leave their communities unprotected or essentially unprotected due to the distance that career firefighters would have to travel to make it to the scene of an incident.

The financial structure of the nation's fire departments is something that is nearly impossible to nail down as there is no uniform method of funding. In many rural areas the fire departments receive no governmental funding outside of grants and all funding is derived from completely voluntary means. It is clear from the years of service I have in Alabama that many volunteer departments function off of less than \$10,000.00 per year and in many places, I know of those that operate with less than \$8,000.00. The regulations imposed by this proposal would completely destroy those agencies as they have no possible way to meet the demands that are currently placed on them.

My own county has a tax structure in place to provide governmental funding to volunteer fire departments. The funding is derived from a millage tax on all real and said property in the county (3 Mill). This tax generates roughly \$18,000.00 for each of the 19 fire departments that protect the 913 square miles (12,797 population) of the area. The funding provided does not allow for adequate replacement of equipment or operation outside of the three municipal governments that can provide other tax support. In the municipal volunteer departments, the regulation would expend the tax levy and would in turn require a significant investment into the fire department that local tax funding is not able to meet. Further, the economic condition in the county is such that no new tax can be supported (the population has voted down every attempted increase in school and public safety taxes in the last two decades). Simply put, there is no funding to meet the regulation.

Questions to be Posed

- 1) The use of the CDC PMR data is a piece of the puzzle that one could use to begin a risk analysis, but it is not conclusive, enough support a complete risk analysis nor support the sweeping regulations that are proposed. Why was this data chosen to represent the need? There is other data (USFA) studies that indicate a different picture and provide conclusive results on population served and personal demographics of the decedent.
- 2) If Safety and Health are the ultimate outcome that we hope to see from these proposed regulations, what are we expecting the impact to be? Trucking is already heavily regulated and the most recent analysis from FMCSA indicates that the regulations have not eliminated a significant risk to the the safety of that industry and the motoring public.²
- 3) What will the financial impact be to small and rural communities that lose their fire protection?
- 4) Grant funding might be available for a short period of time if these regulations are implemented. Where will the primary focus of this funding be?

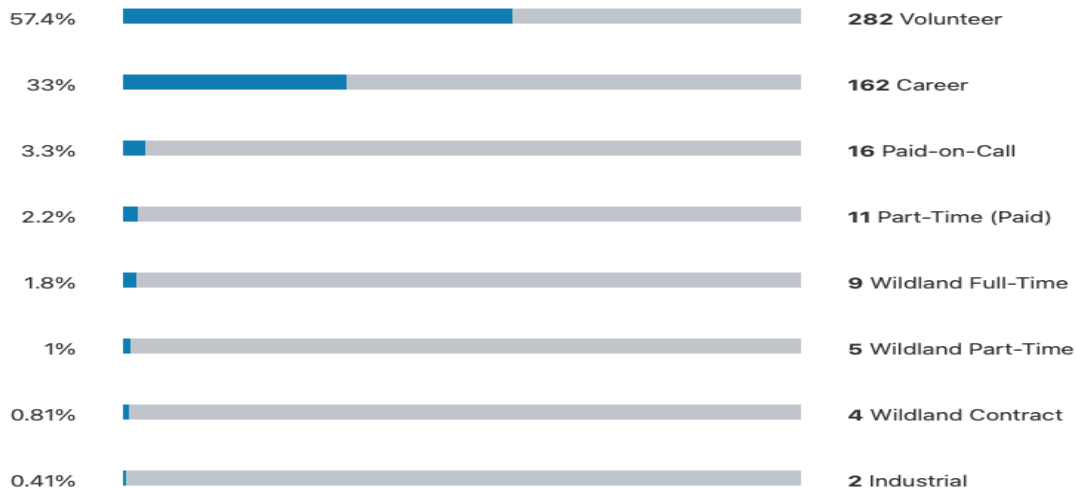
² <https://www.fmcsa.dot.gov/safety/research-and-analysis/large-truck-crash-causation-study-analysis-brief>

- 5) What potential fines or civil penalties might be invoked if ESOs are not able to meet the regulations requirements? Would those potential fines and civil penalties be partially assessed if ESOs are able to partially meet them?
- 6) Volunteer manpower is already declining in the rural areas, and it is often the older members of the population that provide an ever increasing portion of the fire service. Is there a possible “grandfather” or “phase in plan” for the implementation of these regulations?
- 7) If health and safety programs are to be successful and economically feasible, should they not be implemented at the regional level?
- 8) If health and safety is the focus of this proposed regulation, why not focus on mental health and the significant increase in issues found in that area?
- 9) No death is trivial, but how many more civilian and fire service lives will be lost due to the lack fire service protection?

LODD Numbers

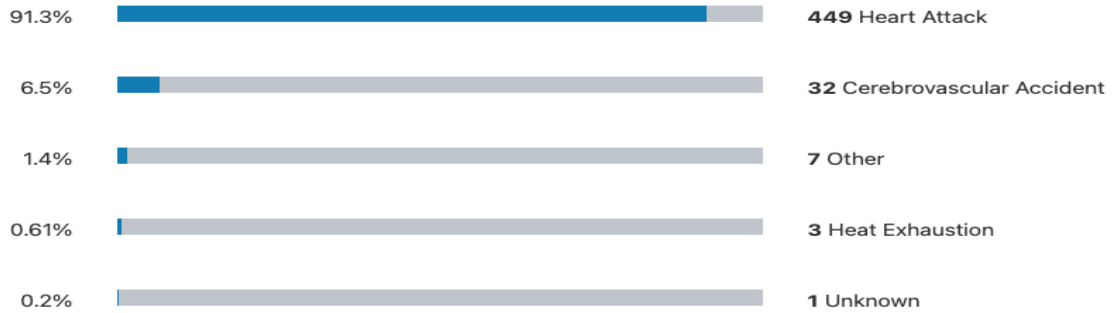
A more realistic look at numbers on a national scale will come from the LODD statistics that are kept by the United States Fire Administration. The USFA has provided the statistics in a spreadsheet form for the past 20 years on their website. The statistical analysis of the results indicates that the risk is smaller than reported in the CDC information. Granted, the information provided by the USFA does not track deaths due to cancer, suicide and some other issues, but it does track the deaths that are considered on duty or because of duty. The USFA website also provides a useful report builder tool that will allow any user to look at the data in specific detail. For instance, the following charts were selected by pulled a ten-year period of data (January 2010 to December 2019) and looking specifically at fatal incidents involving overexertion.

Firefighter classifications



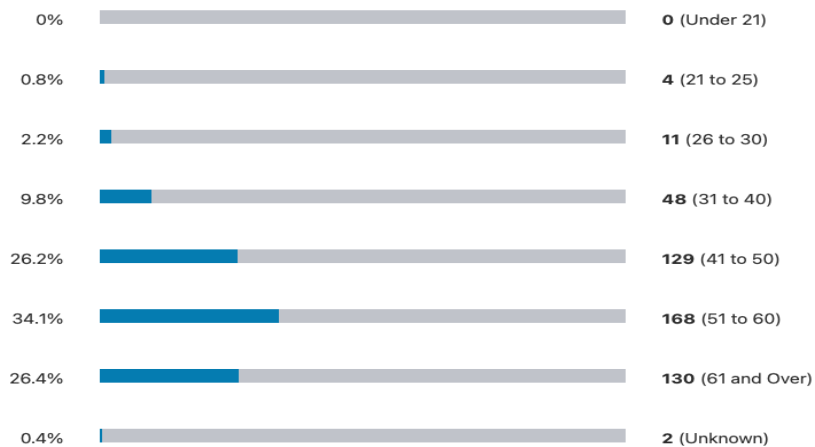
The report indicates that there were 492 recorded deaths due to overexertion. The majority of the deaths occurred in the volunteer ranks. The following chart indicates that the vast majority of the deaths were heart attacks that were suffered on scene or within 24 hours of a stressful event (training, response, on scene operations, etc.).

Nature of fatal injury



The report indicates that only 12.9% of the fatal incidents were in the under 40 community and that the majority of deaths occurred in the 41 to 60 age group (60.3%). Firefighters that are 50 years old or older accounted for 60.5% of the total deaths on record related to medical incidents.³

Age of firefighter when the fatal injury was sustained



Percent of firefighter fatalities age 40 and under: 12.9%

³ <https://apps.usfa.fema.gov/firefighter-fatalities/fatalityData/reportBuilder>

To illustrate the point of the risk even further the numbers were narrowed to only the 2018 data set (this was done largely because the NFPA report⁴ cited an estimated number of firefighters in 2018) and the risk of cardiovascular incidents was examined in the fire service and in the general population for a specific age group only. The data for the fire service was inclusive of all cardiovascular incidents that occurred that year. The USFA reported 35 heart attacks or strokes that occurred on scene or within 24 hours of the incident (determined to be as a result of the incident). The NFPA reported that there were 1,115,000 estimated career and volunteer firefighters in the United States that year so the rate or chance of death from this type of event was .0031%. The CDC Wonder program was used to source the data for the general population, and it indicated that the total deaths from heart conditions and strokes stands at 286,496 out of a total population of 155,674,539 (Ages 35-74).⁵ The rate of death from this type of event on the population sampled indicates that it is .1563% or roughly 5,835% more than in the fire service. It should be noted that there were no reductions in the number of gender or racial groups to match the fire services demographic information, but it is impossible to allege that the inclusion of the specific data in set from the CDC would have done anything but make the gap much worse. Likewise, the incidents of heart attacks and CVA's should be aggravated in the fire service based upon the nature of what the fire fighter is engaged in compared to the general population.

It is clear that there is a risk of death in a dangerous exercise such as firefighting, but it is not significant enough to merit the implementation of the proposed regulations.

Additional Information

Regulating the volunteer fire service completely into oblivion will result in stories like this without the part about the Samantha Volunteers but the burning question of where was the fire department and why didn't they come.

<https://patch.com/alabama/tuscaloosa/column-house-fire-samantha?fbclid=IwAR0hAmPzif0ea41LAODmmv-sRhPp2sVeQuRaW5irMue807BmpmbY4Mfp1IY>

Recommended Actions

It is recommended that all volunteer fire departments and volunteer firefighters be exempted from the OSHA regulations as expressed. The items that are covered in the report should remain as standards that should be met but placing these items in regulations will force departments to meet them without additional funding to make this possible. Grants for wellness and fitness programs should be moved to a higher priority in the overall AFG grant program if this is a significant risk.

⁴ <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>

⁵ <https://wonder.cdc.gov/controller/datarequest/D76;jsessionid=3B2F16ACBF971F78B7230E56241A>

Departments applying for that funding should seek a grant to implement the regulations and the requirements of the program.

All volunteer fire service leaders are concerned for the safety of their responders and seek to make every possible safety feature and program available to our responders. However, we have a fine line to walk between being able to provide lifesaving service to our residents or being regulated out of business by well-meaning individuals that create a “significant problem” where one does not exist.

2. William Betts

Comments on the Conference Call for the Small Entity Representatives on October 20, 2021, by Bill Betts, Past Chief, Current Safety Officer, and NVFC Board Member from Frederica Vol. Fire Company in Frederica, DE

OSHA Representatives Anissa Harmon and Tom Mockler and SBA Manager Bruce Lundegren:

I sat in on the Conference and immediately realized that all of the attendees were all in consensus on the economic impact that the proposed regulations would have on small Fire Departments and Tow Company personnel. Unfortunately, I had a fire alarm and had to respond to a motor vehicle accident during the middle of the presentation, and when I returned, my audio would not work on my computer.

I believe that the consensus from the panel was also that everyone was promoting safety, however, some of the regulations such as Health Physicals are very costly, and I don't believe that a lot of medical personnel realize the lifestyle of the Fire Fighters.

Currently, our department has run 223 fire alarms which include motor vehicle accidents, water rescues, electrical hazards (wires down, transformer and pole fires, etc.), manpower assists for our ambulance crews, and fire alarms (residential fire alarms, working fires, etc.). Out of the 223 runs that we have responded to, only 12 alarms were working fires where we had to do extinguishment. This is a small percentage of the actual alarms where members are put in danger. Covid 19 is rapidly becoming the number one cause of death in the fire service, followed by heart attacks and being struck on the highway by motorists who are not paying attention for a variety of reasons. Very few firefighters die from injuries sustained at the fire scenes.

ILC Industries (space suit manufacturer) is located in our fire district, and the increased responsibilities of the fire brigade regulation 1910.156 caused them to drop their active fire brigade and go to an incipient brigade due to costs of training and equipment, which forced our fire department to step up our response to their plant site.

NFPA is also very unfriendly to the small volunteer departments as they generalize their requirements on the life cycle of breathing apparatus and PPE which is very cost prohibitive. A set of PPE is currently over \$3,000 per firefighter, and we just spent \$243,000 on new SCBA because of life cycles determined by NFPA. Our 12 working fires this year does not relate to the large cities that this life cycle is meant for.

I worked the last seven years of my career in OSHA Consultation as an Industrial Hygienist funded 90% by Federal OSHA and 10% by the State of Delaware. Being familiar with most of the OSHA regulations, I posed a question on the legality of OSHA promulgating regulations on the Volunteer Fire Departments, when departments like mine are staffed by volunteers, and not employees. We do have paid part-time EMTs to staff our Basic Life Support ambulance service.

Please contact me at wrbetts1@comcast.net or 302-535-7080 if I can be of any further assistance.

3. David Denniston

Written Comments on Proposed Changes For 1910.156

David Denniston

Cortlandville Fire Department

607-423-1636

ddenniston@cortlandvillefire.org

Thank you for allowing me to participate in the hearings on the proposed OSHA changes to 1910.156. The comments and concerns shared at the hearing echo what I am hearing as I talk to volunteer fire service organizations across the state. While we feel that there are several best practices in the proposed changes, some of them could be crippling to the volunteer fire service. As communities we are struggling to find people with the time and energy to volunteer for our organizations. These proposed changes would have drastic effects on the time requirements of the volunteers. The number of additional training hours, documentation requirements and additional policies needed, if this were adopted in its current state, cannot be ignored. In addition to the increased time requirements, the cost of implementing these changes would be staggering. The Virgil Fire District met as a fire department to explore the additional costs. We conservatively estimate that to meet these requirements we would need to hire someone to implement the new requirements. Between salary and benefits, we estimate this to be an annual \$100,000 expense. Our total annual operating budget is currently \$285,000 for everything including, but not limited to, vehicles, buildings, training, equipment, insurance, and all other expenses. New York State also has a 2% tax increase cap. We would have to vote to override that would have other financial impacts to both the department and our community. Our other option would be to hire an outside firm or consultant to manage this for us. We estimate those costs would be similar. I am attaching statements from other districts and departments that I have discussed these changes with. You will notice many common concerns and themes from these comments. Most departments are already working towards implementing many of these safety initiatives. The difficulty comes when these are mandated so that they cannot be implemented as time and/or cost can be controlled.

As I explored the proposed changes and supporting documentation, I noticed some opportunity to promote safety and save both responder and community lives that would have little to no cost or additional time requirements that the current proposal does. When you look at the data for both EMS and Fire injuries and deaths, it is striking that a large percentage of these numbers are from incidents responding to or returning from alarms. While the proposed changes do require the organization to have response policies, there is little guidance to what those should address. Several of the other changes list resources such as NFPA standards to guide the requirements. NFPA 1500 chapter 6.2.8 clearly states that an emergency vehicle shall come to a complete stop under any of the following circumstances including at red traffic lights, stop signs and negative right of way intersections. This one change to the regulation would save countless injuries and deaths across the country as intersection accidents are one of the leading causes of injuries and deaths among first responders today. This change

would have zero cost to an organization to implement other than some simple administrative and training costs. I am sure there are other changes such as this one that could be implemented with minor economic impacts to the local agencies. These should be explored further as part of the process. While there was some input from organizations such as NVFC in this process, I have been unable to find many people that were aware of, or able to participate in, this process. The fire service has many resources that could be used to help craft new changes that would also save lives and injuries while considering the economic impact to the local organizations. I might suggest that additional input be gathered from these organizations as part of this revision process.

If these changes are to move forward as drafted, it would be our opinion to have volunteer departments exempt from the regulation. The economic impact to these organizations would be substantial and would most likely result in the closure of these volunteer departments resulting in higher taxes for communities as they contract for career staff fire and EMS protection.

Thank-you for your consideration,

David C Denniston

President

Cortlandville Fire Department

Response to the revision to 1910.156 Fire Brigade Standard

The Plainville Fire District encompasses 22.9 square miles within the Town of Lysander, Onondaga County, New York. There are approximately 1750 properties within the geographic area of the fire district. A two-thirds of the area of the fire district area is rural with limited population; the other third is suburban with several subdivisions.

A rural fire district faces many challenges including lack of an immediately available water supply (municipal water with fire hydrants), a decreasing number of available volunteers (for numerous reasons), a static tax base and a part-time staff of one.

The proposed revisions to 1910.156 Fire Brigade Standard will place an undue and rather onerous burden on both the small rural and suburban volunteer fire service.

- First, we do not employ staff to coordinate, research, compose, review and implement a program of this magnitude.
- Second, our volunteers are just that – they volunteer their time to train and respond to situations; our volunteers are dedicated to serving the residents of our fire districts when their schedules allow. Requiring the input and review of volunteers is asking for more of their limited time; this has proven to deter volunteerism from our current members and attracting new members from the general population.
- Third, we currently operate under the **Public Employee Safety and Health Bureau** (PESH). The bureau was created in 1980 to enforce safety and health standards of Occupational Safety and Health Act (OSHA) for public employees in New York State. PESH is under the jurisdiction of the NYS Department of Labor. The proposed revision causes a conflict of standards and jurisdiction. This places another burden on the entire fire service in the state of New York.
- Fourth, several of the revisions encompass elements of FEMA's jurisdiction with regard to Incident Command Structure (ICS) and the National Incident Management System (NIMS). Again, the proposed revision causes a conflict of standards and jurisdiction.

The revisions compound a manpower resource crisis by requiring a level of personnel involvement which would place a burden even on paid, professional elements of the fire service.

Rather than revising the current requirements, a more productive approach may be an analysis of all current standards of operations with the goal of streamlining the system rather than making it more burdensome and leading, ultimately, to non-compliance due to manpower and monetary constraints.

Email correspondence on proposed OSHA 1910.156 changes

Greetings David,

Thank you for alerting me to the proposed revisions to OSHA 1910.156. After reading the 40 page document, I must say I am truly disappointed that bureaucrats are considering saddling us with such onerous regulations. As we are one of many small fire districts in NYS, with a total annual budget of only +/- \$130,000 and a volunteer fire department membership of only 21 active member we oversee and fund, the proposed standard would create an enormous strain on our present and future 5 member Board of Fire Commissioners.

As with most smaller fire districts we are unpaid volunteer commissioners who hold daytime jobs, hence the many requirements for creating the many, many written plans, risk assessments, procedures, projections, etc. required would not only create an overwhelming workload on volunteer Commissioners, but also on our volunteer fire department chiefs and officers who would have no choice but to help gather the various data on his/her members and equipment. As you know, it is hard enough to recruit and maintain a volunteer membership and their officers these days. Mandating the multitude of paperwork requirements would only make it harder to maintain a qualified group of first responders, both firefighters and medical personnel.

Most smaller districts like ours would probably have no choice but to try to hire an outside firm or person to create and maintain the pile pile of paperwork that would be required, all at extra cost to our districts taxpayer or by cutting funds that are presently used for essential equipment or training costs. With only a 2% or less annual increase allowed by NYS to our annual budget, we would most likely have to raise our districts tax rate to fund someone to handle the cost of hiring a professional to handle these regulations.

We already maintain plenty of paperwork on our district and our volunteer first responders and they already constantly train and attend ongoing NYS training. The micromanaging required by the proposed OSHA revisions appears to be nothing but rules used to justify their bureaucrats jobs of the results of lobbying by insurance companies trying to lower their risks of paying out claims.

Please have your committee work as hard as they can to defeat or at least greatly lessen the impact of the final version of this proposed revision.

Regards,
Walt

Walter Starkweather
Chairman,
New Woodstock Fire District
PO Box 178
New Woodstock, NY 13122
Mobile: (315) 415-7450

Dave-thanks for this revision. WOW-lots of recommendation/ regulations. I know my dept is doing some of the recommendations as far as physicals, annual testing of equipment etc. Anyone reading this would NOT want to be a Commissioner and Definitely NOT a Chief or Asst. Chief. In my dept we are struggling to get capable asst chiefs and line officers, along with new

members. Very difficult to get them to step up and be Chief, with all the paper work, guidelines etc. I am VERY concerned about having capable leadership in the fire service going forward Hope this helps.

Jim Empie, Chief Worcester

David,

This proposal would be very difficult to implement, while I admire the spirit and intent it will be very expensive and time-consuming to implement :

- (i) The ESO shall establish in writing and implement a health and fitness program that enables responders to develop and maintain a level of fitness that allows them to safely perform their assigned functions, based on the type, level and tier of service(s) established in paragraph (e) of this section.
- (ii) The program shall include the following components:
 - (A) Assignment of a health and fitness coordinator;
 - (B) Periodic (not to exceed 3 years) fitness assessment for all responders;
 - (C) Exercise training that is available to all responders;
 - (D) Education and counseling regarding health promotion for all responders; and
 - (E) Process for collecting and maintaining health-related fitness program data.
- (iii) The health and fitness program shall be incorporated into the risk management plan, established in paragraph (e)(1) of this section.
- (iv) The ESO shall establish fitness levels specified in the program based on fitness standards determined by the qualified healthcare professional that reflect the responder's assigned functions

Will this "confidential health database" need to be something that is digital or can it be on paper? Because if it is digital that would be an extra cost.

(7) Confidential Health Data Base. (i) The ESO shall ensure that a confidential, permanent health file is established and maintained for each responder, based on the type and level of service(s) established in paragraph (e) of this section. (ii) The individual health file shall record the results of regular medical evaluations and physical performance tests, any occupational illness or injuries, and any events that expose the responder to known or suspected toxic products, contagious diseases, or dangerous substances. (iii) Health information shall be maintained as a confidential record for each responder as well as a composite database for the analysis of factors pertaining to the overall health and fitness of the group.

In the case of assistant chiefs, this should be something that they are working towards (hopefully they already have it but sometimes if they are working towards the qualifications it allows us a lot more flexibility - especially in small rural departments

(iv) Demonstrate that each responder who is a manager/supervisor (crew leader/officer) meets professional qualifications that are at least equivalent to the requirements of NFPA 1021, Standard for Fire Officer Professional Qualifications.

Hope this is what you were looking for.

-Ted Schulz

Mr. Denniston,

I am the chairperson of the Canaan Fire District in Columbia County. We are a very small rural fire district with a \$150,000 annual budget. The board works to make sure there is no large increase in local taxes. We are all volunteers as are the members of the Canaan Protective Fire Department who own the building and "man" the trucks and equipment the district supplies. The cost and amount of time needed to comply with all the standards would destroy local fire departments and districts. The Canaan district has SOP and do much of what is listed although who knows if the writers of this regulation would think it was good enough. The requirements for pre-planning are onerous. The district does pre-planning but not to the extent this regulation requires. We would have to hire outside people to produce the documents as we do not have the expertise or the time- we are all volunteers- to produce them. There are no sleeping quarters in the building; do we need to build sleeping quarters?

It would be good for the writers of the regs to actually visit and spend time with a local volunteer department to understand how much time is spent on drills, truck maintenance, meetings, and most importantly, responding to emergency calls 24 hours a day. And, oh yes, go to work, family time, personal chores, etc.

One size does not fit all.

If there is other specific information regarding Canaan you think would be helpful please let me know. Hopefully this can be stopped or at least modified.

Sincerely,

Patricia Liddle

Chairperson, Canaan Fire District

Dave,

Although well intentioned, the proposed changes to OSHA 1910.156 are not feasible for volunteer and small combination fire departments. The logistics of implementing such changes, along with the proposed documentation requirements, would cripple a department of our type and size (all volunteer, 65 active members), and would ultimately create an undue burden for our taxpayers.

Sincerely,

Chris Breed

Commissioner | Ontario Fire District #1

(585) 749-6723 | cbreed@rochester.rr.com

Sir, I'm Dennis Graves, chairman of Independence Fire District, Whitesville, NY. I didn't get very far down through the pages and it became very clear that this is more mandated BS, I know this is not what you want to hear. We are a very small community with an annual budget of 65,000 and can barely make ends meet now, when I look at all the things, regulations, policies we are supposed to have, it is overwhelming. This stuff is for large communities, Cities, paid dept. The Whitesville FD which supplies our manpower is made up of 12 -15 active firemen, we are about as rural as you can get, the guys just plain don't want to hear about the mandates the government is trying to put on them, it just doesn't work for us. Denny

Dave ,

We need more than one day to review, as you know Momentive is Subject to OSHA requirements rather than PESH. It has not been adapted by PESH yet. Have they gone to NYS Chiefs as they have a industrial sector for comment. I have been involved in industrial brigade for over 44 years and most of the things were covered or assumed in 1910.156 however some of the now are clearly marked "Shall" which is the enforcement rule that can be fined rather "May" or is suggested. We are under tremendous cost pressures for our industries especially since the pandemic. Please understand the industrial fire brigade assist the paid and volunteer fire departments but are under no obligation to continue that activity and the result of this may cause a problem dumped on to the paid and volunteers lap. I will review with my staff and mark up what I see that are some of the show stoppers. I want to further say in general I agree with what is written, it protects people but I would suggest there is a time frame to implement this regulation. Let me know if you need further detail or have questions.

6. Clarence (Chip) Jewell

Comments on Proposed OSHA Regulations on Fire Service Health and Safety

NFPA standards have long been the gold standard for the nation's fire and rescue service. Over the years, this standard making body has extended into developing consensus standards for every facet of the fire and EMS service. Firefighter training standards, medical/physical standards, apparatus standards and numerous operational standards are viewed as the industry standards our fire and rescue departments strive to achieve.

Standards are not legal and binding, but can be used during civil litigation as the industry standard that should be utilized. Though failing to follow the standard does not result in criminal actions, a court could hold an emergency service negligent for failing to comply with the established and accepted standards. To adopt NFPA standards in to regulation would effectively place many fire and rescue department in non-compliance that could have a disastrous effect, particularly on the nation's volunteer fire and rescue service.

Even major fire and rescue organizations that are fully career or combination departments would be faced with unfunded legal mandates that will pose a tremendous fiscal burden on fire departments, municipalities and county governments. I fully support and endorse every effort to enhance the health of personnel. However, many, many departments simply cannot afford to financial burden. The implementation of NFPA 1582, NFPA 1500 and aggressive programs such as the 16 Life Safety Initiatives have dramatically reduced operational line of duty deaths over the last 40 years.

Unfortunately, every fire department does not have the manpower or financial resources to fully implement NFPA 1582 and most likely would never be able comply with mandatory regulations. Many fire and EMS departments struggle each day to meet daily expenses to keep the doors open and apparatus running. Some volunteer fire departments have an operating budget of less than \$10,000 a year. Carnivals, chicken dinners and bingo are held just to raise funds to meet monthly bills. Even larger suburban and metropolitan fire and emergency service organizations struggle to recruit personnel and convince political leaders to provide funding.

One size does not fit all. The volunteer fire and rescue service of our nation is a varied as the nation's climate from the very large metropolitan volunteer and combination fire departments with over a hundred members to the one engine rural departments lucky to have three people responding to an incident. The thousands of emergency service organizations of our country stand as sentinels protecting villages, cities and counties throughout our nation. A fire company that has limited funds will be forced to choose to pay the insurance bill or provide physicals to members. As many volunteer fire departments depend on older and members, medical physicals could easily cost \$1,000 per person.

Even more of a concern would be the proposed requirement to assure members are fit for duty. Pre-employment or member testing and fit for duty evaluations would not only be time consuming, but also a deterrent to potential new and incumbent members. Our nation is suffering with a decrease in volunteer participation in fire and EMS. Many volunteer companies are struggling to recruit and retain volunteers, adding more time to what is often an already somewhat burdensome process will pose another barrier to keeping members on the rolls or convincing the public to join their local fire department. Though most companies do provide some basic form of evaluations for fitness for new

operational, to mandate a specific regiment as outlined by NFPA 1583 would be time consuming and burdensome, ultimately defeating the purpose.

Other proposed regulations based on NFPA standards could ultimately create voids in emergency services in many communities. The 10 year gear requirement is well intentioned. In many situations the turnout gear rarely sees interior firefighting. Many small departments do not have the financial ability to replace gear every ten years. And though the Fire Act Grant is presently available for such purchases, these funds are limited and often a target of budget hawks in Congress. The present standard for two sets of gear is cost prohibitive, even for many large career departments. Adopting these standards into regulation will again be unachievable for many departments. Even larger departments simply do not have the funding available to meet these well intentioned, but very costly standards.

Presently, OSHA conducts operations with a more positive attitude, working with organizations to meet compliance rather than the more government harsh hammer of the past. Even so, many fire and rescue companies will never be able to comply with NFPA standards proposed to become regulations. No one can predict the actions of OSHA or field representatives of OSHA that could use a more aggressive stance against fire and rescue companies that are non-compliant and potentially forcing many departments out of business, thus jeopardizing public safety.

The efforts of fire and rescue companies of our nation in the last two decades to address health and safety are evident when reviewing past history of line of duty deaths. Our service has continued to see a decrease in operational line of duty deaths in the last 40 years due to the continued work by departments to implement NFPA standards as practical. Efforts to decrease exposure to cancer and increase medical evaluations are ongoing. Though I am very supportive of efforts to achieve every NFPA standard, utilizing these standards as OSHA regulations will not have the desired effect, but rather pose an unnecessary and often unachievable legal regulation that could create an increased void of volunteers and service delivery to communities across our county.

Thank you for the opportunity to provide my comments as a member of the SBREFA panel and additional written comments attached,

BE SAFE,

Clarence E. "Chip" Jewell, III

Assistant Chief/President, Libertytown Volunteer Fire Department, Frederick County, MD

Retired Deputy Chief/Director, Frederick County, Maryland Division of Volunteer Fire & Rescue Services

10986 Horseshoe Drive

Frederick, MD 21701

301-676-2285

7. Louis Garso

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Au Sable Forks Volunteer Fire Department, Inc.

"Established 1878"

**Serving the North Country through
"Fire--Ice--Water"
For 143 Years**



Louis Garso
Vice President & Budget Officer
Board of Fire Commissioners
Au Sable Forks Fire District, Inc.

RECAP OF CONFERENCE CALL COMMENTS

OSHA CONFERENCE PREPERATION NOTES

ADDITIONAL WRITTEN COMMENTS FROM:

- Tom Rinaldi
Past President
Association of Fire Districts of New York State

- Eric Day
Director of Emergency Services
Clinton County, NY

- Wally Day
Chairman of the Board of Fire Commissioners
South Plattsburgh Fire District

Recap of my Thoughts on our Conference call Panelists Comments of October 20, 2021

16:00 Hours

1. The burden of labor cost noted in the draft proposal are not rooted in reality and leave open the actual costs of implementing this OSHA Draft Proposal. We believe that they are grossly understated. For what reason we can only speculate.
2. The cost of implementing the ERP are grossly understated, prohibitive and unattainable for the vast majority of Volunteer Fire Departments in New York State
 - a. In New York State we are limited by law to increasing our budget no more than 2% over the previously year's budget. If we were to implement this OSHA Draft we would be in violation of the law. **How will OSHA legislate this?**
 - b. OSHA ERP one-time startup costs as noted on your Unit Costs by Employment Size Class of \$41,352 dollars, this alone will place a financial burden on the fire districts tax payers in order to implement.
 - c. OSHA ERP annual maintenance cost alone using your numbers would be \$60,569 dollars again this creates an unmanageable financial burden on our tax payers.
 - d. The ERP initial startup one-time costs and the Annual maintenance cost that would be incurred the first year of implementation combined alone would be \$101,921 dollars *which is a totally unmanageable financial burden placed on New York State Fire Volunteer Fire departments!*
 - e. Responder Medical/Fitness Requirements of the ERP are a great cause for concern. Your program would results in a 100% increase in our cost of complying too the proposed new regulations. For us that would mean a \$4,096 increases cost added to the budget annually. This will place an undue financial burden on the tax payers.
 - i. We have a medical program than works just fine and is not need of improvement as we provide physicals annually to all members to the level of their job description.
 - f. Responder Medical/Fitness Requirements, it is our belief that we will lose 30% or more of our skilled firefighters if these requirements are adopted. That means highly skilled firefighters gone, but our department is ageing and that does affect what we can and can't do on the fire ground but we

are all members of "One Team" and we all work together to mitigate the incident. If our "The Old Man" is gone, who will be the mentor and teacher for the youngster's, if were all gone who will teach them? Think About That For A Moment...

- a. As we understand your proposal we would need to have a place where the members could go and work out to maintain their physical fitness requirements of the ERP. In our fire station and many fire stations across this great state we simply just don't have space in the existing fire station to setup a work out area. The space just doesn't exist so how are we to make this happen in a cost effective manner. Outside gym memberships cost money and that is money we just don't have.

- g. Implementation of the ERP on fire districts budgets.
 - a. Implement this program as written will result in the following increased costs to do business in addition to what was noted above in 2-b, c, d, and e above. .
 - i. We would need to hire 1 to 2 paid Fire District Employees to write, implement and enforce the program as written.
 - 1. This will place an undue financial burden on the fire districts tax payers that is unattainable.
 - 2. We currently do not have the personnel in our fire district that have the capabilities of managing this program for us so that means we either have to hire an outside agency to administer it or hire 1 to 2 paid employees + benefits as employees of the fire district.

- h. Industrial Fire Brigades.
 - a. It is our belief that if industrial fire brigades are included in the OSHA Proposal and they find the regulations unmanageable that they will close their plant fire brigades and call the local Volunteer Fire Departments to come to the factory when it is on fire and burning down.
 - b. This OSHA Proposal has the potential for increasing the risk to our Volunteer Firefighters of death and dismemberment due to the many chemicals and specialized equipment used in the manufacturing process that we have no knowledge of, but will be required to respond to. We would need specialized training and equipment to respond to these emergencies. The net result will be increased cost and overworked firefighters who are now stretched

Thin doing their regular job without taking on the additional burden of a chemical or manufacturing facility.

i. FIRE CHIEF & WOWMEN & MEN OF OUR VOLUNTEER FIRE DEPARTMENTS

- a. We have a good Fire Chief here who supervises and takes care of our people as if he was their father and he is on the fire ground. His job is to train and lead our people when the shit hits the fan and there's no one else to help. He is a conscious, caring, highly trained firefighter, empathetic leader and he leads by example. He is also a father with three lovely children with two sons who are currently members of our fire department with a daughter who was also a member of this department. He oversees training 52 weeks out of the year and is on call 24/7. We can fight fire with any so called professional fire department and hold our own and in many cases exceed their capabilities. His plate is full and to burden him with these draft proposals will tip the can and push him over the ledge and he will leave. There is such a thing as unrealistic expectations and **OSHA YOUR IT!!!**

j. THE NEED FOR OSHA TO PREVENT DEATH AND INJURY

- a. If you're looking to prevent death and injuries to firefighters we suggest you look to the BIG CITY DEPARTMENTS FDNY and other Metropolitan Paid Fire Departments and the US Forest Service, who practice aggress fire tactics with loss of life resulting.

The Wildland Governing Agencies are the ones that need your help not us!

The WILDLAND FIRE AGENCIES WHICH ARE RUN BY YOU, (Fed's) kill their firefighters left and right needlessly every single year, year after year! When is OSHA going to STOP this practice? You have more regulations for them than you can shake a stick at but you keep killing them every dam year.... WHY? For a Tree??? (US Forest Service) We would suggest that you clean up your own house before you come into ours.

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Louis Garso
Au Sable Forks Fire District, Inc.
P. O. Box 785
29 School Lane
Au Sable Forks, NY 12912-0785

Email: garso@affdcommii.net
Cell: 518-420-5153

OSHA conference Call Prep-Notes:

October 21, 2021, 16:00 Hrs.

Background:

Louis Garso, 37 year member of the Au Sable Forks Fire Volunteer Fire Department which serves a population 3,800 residents, with a coverage area of 107 Square Miles with 98% of our Fire District located in the rural mountains of the Adirondack Park in upstate NY.

I'm currently serving in an unpaid position on the Board of Fire Commissioners who are responsible for providing emergency services in our Fire District by levying taxes on the property owners to provide these services. I have been a member of Board of Fire Commissioners for the past 25 years with most of those years as Chairman of the Board and I'm currently serving as Vice Chair and Budget Officer for the Board.

Background

Our local volunteer fire department is under the care, custody and control of a Board of Fire Commissioners of the Au Sable Forks Fire District Inc.

We provide them with the tools necessary to do their job, example firehouse, fire engines, turnout gear and all other expenses required to support their Mission of Providing Emergency Services to our community

Prepared Comments for conference call:

My focus is primarily on the cost benefit effect of the proposed Draft OSHA Regulations governing Emergency Services. We have concluded from our studies of the financial impact of your proposal that it would be economically impossible for us to fund the costs with the ERP's noted in this draft, with the will result in the closing of the Au Sable Forks

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Volunteer Fire Department & Ladies Auxiliary, an organization that has been providing Volunteer Firefighting Services to our friends and neighbors since its inception in 1878 for 143 years and has the reputation of being one of the Best Operational Fire Department's in the County.

We have two other Volunteer Fire Departments, that service the Town of Jay and they too will not be able to meet the financial requirement of your proposal if enacted into law.

The OSHA Draft Proposal will impose a financial burden on your Volunteer Fire Fighting Organizations that very few will be able to meet.

Please note: *That on a prior conference call it was said (My Words) that if the Volunteer Fire Department went out of business the community could just dial 911, in case you all didn't know it we are 911!* Ladies and Gentlemen this isn't like the 911 you see on TV this is the real life and death situations that we regularly handle every day of the week and sometimes we get injured and die.

If we close this Fire Department the nearest fire department that would respond to calls is located 25 miles away and by the time that they get to the scene from their house, your house will be brunt to the ground and if you had a heart attack and needed CPR you would be **dead!** That's real life out here in America...

In support of the above we present the following:

Our 2022 Estimated Budget Expense's for the year is \$327,629.00. Please don't be fooled by this number this is just about the max our community will allow us to go before they run Us out of town on a rail because they don't have any more money to give. (No pun intended)

There is a law in New York State that limits fire district/department budgets from exceeding 2% of the previously year's budget based on a inflation based formula administered by the state that tells us exactly how much we can exceed the previous year's budget. You will see by the comments on the anticipated increased cost to implement the new OSHA standard that we will be in VIOLATION of this NYS Statue. Please note that this year the State limited us to a .0156% increase over last year's budget, as you can

see, we didn't get the 2%, so how can we comply with the OSHA directive that will require us to add \$60,569 in annual maintenance cost to administer the requirements. (These cost estimates were taken from OSHA data provided) *We believe to administer the entire OSHA requirements will be way over \$100,000 due the hiring of 1 and most likely 2 paid staff to do the record keeping and admiration of OSHA requirements for our Volunteer Fire Department.*

In using your Initial Medical Surveillance Unit Medical Cost figure of \$253 located on Page 81 table V1-4, this alone would increase our medical costs by \$4,096 upon initial startup and \$4,096 annually going forward. This represents a 100% over our present costs.

We question your Unit Medical Costs on Page 81 Table V1-4 we believe that these costs were understated. Upon fact checking one item, we find that EKG costs were grossly understated. We note that average EKG costs nationwide range from \$175 to \$229. (Google.com)

With reference to Table V1-3 Labor Based Unit Costs by Employment Size Class- Fire Department and Firefighters Annual Cost we would like you to note:

On pages 79-83 you list the annual cost of the proposed Emergency Response (ER) Program by item. When we add the annual cost to meet the OSHA Proposal is \$60,569 for this Volunteer Fire Department with the initial startup cost estimates of \$41,352.

When you combine the One-Time startup cost of \$41,352 and the annual maintenance costs of \$60,569 dollars that would add \$101,921 to our \$327,629 budget to equal \$429,550, then continue with the \$60,569 dollars annual maintenance cost which is a number unsustainable for our Volunteer Fire Department and our community. Our community just doesn't have the money to fund this program. **Our medium per capita income runs from \$16,676 to \$18,049 annually.** I was speaking to a Fire Commissioner in another Fire District and his annual budget estimate for 2022 is \$52,000, can you imagine the devastation you will reek with your proposal. **Their Toast!**

We believe that we would have to add two (2) fulltime paid staff to our District payroll and that number has yet to be determined but probably will be close to \$100,000 if not more, again we do not have the resources to accomplish this. This too will require monies to fund this which we don't have.

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Our Volunteers already are doing many of the tasks noted in your Draft Proposal but not to the extent of the detail that would be required now.

You should consider in your deliberations that we already follow the NYSOFPC guidelines which are based on NFPA regulations to the best of our capability now. Your regulations would add another layer of unnecessary duplication that we will be required to meet. Adding the OSHA proposal to our bucket would be an unreasonable burden and will lead to the closing of many volunteer fire departments and the loss of valuable skilled volunteer firefighters that can still do the job as required to their level of expertise. This will also lead to increased insurance costs, a large increase in personal & business property losses, as well as an increase in the loss of lives in community we serve.

With reference to on scene support we believe that this too is an unreasonable burden as we call the tow truck driver a couple of times a year maybe, to tow the car and for heavy equipment that we need comes from the Town Highway Department and again maybe once in several years do we need there services. Our Fire Chief should not be held responsible for the support services compliance with OSHA the very few times we need them.

We would suggest that you consider an exemption for the Volunteer Fire Service as we are already following best practices in our day to day operations as well as NYS and NFPA regulations noted above.

We truly believe that if you in act your regulations that you will doom the volunteer fire service that has been an integral part of our great county for many years into extinction. If that is your goal, you will surely achieve it with this regulation.

We preach safety and we act safely on the fire ground to extent possible, in order to mitigate the incident. If OSHA is so concerned about firefighter fatalities they need to look to the **cities** and **wildland firefighters** and not the volunteers. Yes we die, we die every day from various causes on and off the fire ground. We are as safe as we can be given our job description to **"go in harm's way"!**

ADDITIONAL WRITTEN COMMENTS ON THE PROPOSED OSHA MANDATES:

Please Note!

I asked my fellow Firefighters, Fire Commissioners, Director of Emergency Services Clinton County & our Past President of the New York State Association of Fire Districts, Inc. to add their comments as to the Impact of this Proposed OSHA Draft on the Fire Service in New York State. Please note that it is our combined belief that if this proposal is enacted as is will lead to the majority of Volunteer Fire Departments in New York State to close. If the three fire departments in our township close the nearest city fire department is 30 minutes away from the center of town and who knows how much time it will take them to get into the outlying areas of our service area which comprises of 107 square miles?

Tom Rinaldi

October 22, 2021

Capital Area Association of Fire Districts <tom@rinaldi1.com>

Thu 10/14/2021 9:04 AM

Past President of the New York State Fire Districts, In.

Bruce, I asked Tom Rinaldi to comment on the proposed OSHA Draft Proposal that we reviewed yesterday and please find his comments below. I do agree what Tom added to my comments at yesterday's call. **Note my comments in red.**

- First and foremost, in New York state alone volunteer fire departments save the taxpayers \$3 billion annually, institution of these new regulations will eliminate a large number of those volunteers due to the fact that they will not be able to comply with the perfection the standard is seeking. As a matter of fact, many small career and combination departments will lose staffing due to the perfection sought by the proposed standards. **I do believe that with the demise of Volunteer Fire Departments, that the level of service that would now be required by the County governments would not even compare to the level of service our community receives now at NO PAYROLL**

OR BENEFIT COSTS. We believe that the property loss and civilian deaths would rise dramatically.

- Without volunteer fire protection in place, property taxes in the state would rise an average of 26.5% which would include hiring firefighters and acquiring equipment and buildings.
- It is conservatively estimated that personnel costs to administer the proposed standards and the volume of record keeping necessitated by adopting these standards is in the neighborhood of \$75,000. **We believe that this underestimates the potential actual costs of complying with the statute.**
- It is documented that many of our volunteer departments across the state have limited staff and most of our departments have little or no administrative staff currently in place. The requirements associated with the proposed regulations will require not only administrative staff but full time administrative staff to create the required documents and to maintain those documents on an annual basis.
- This standard appears to place the burden of interacting with skilled support employers on the fire departments. This has traditionally been the burden of the property owner where the emergency response takes place or with the owner of the transportation asset that has caused damage, spill or release. The emergency response organization should not be required to take responsibility for the remediation or mitigation of an incident other than to protect life and mitigate releases until a responsible contractor assumes responsibility for the event. The fire department and the taxpayers who support that department should not be assuming the cost for mitigation.
- There is an assumption in the proposed document that the emergency service organization will call for services that are beyond the scope of typical emergency services, what actually occurs is the ESO directs the owner/operator of the property or transportation asset to call on specialized services that are beyond the scope or resources of the ESO. The ESO is not obligated to take responsibility nor do they have the authority to expend taxpayer funds to mitigate an event.
- The volunteer fire service nationally has a crisis of leadership, many of the proposed requirements based on ideal conditions, assuming ideal capabilities, with ideal resources are unrealistic and will exacerbate the leadership crisis by not only driving good people away but discouraging qualified people from joining in the future. **We concur with is comment.**
- Why is OSHA mandating mutual aid agreements when the fire service has had documented and successful mutual aid agreements for over 70 years. Those agreements are consistently reviewed and updated. **We have an excellent mutual aid system in the North County and has had this since I was a boy and my father was in the fire**

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department back in the 50's. You don't need to fix it if it's not broken and it isn't broken here. PS: we do review and revise annually to keep pace with and anticipate potential challenges that we may face in the future.

- The volunteer fire service would like to know how a department would mandate and institute a meaningful health and fitness program for volunteers. Our Firehouse is an old school house with very limited space to set up a gym and certainly no space for an office for the person that we would have to hire to write and enforce the proposed program. I can tell you that of the three fire departments in our township, none has the space to comply with this program. They would need to either add on to the existing station or build a new fire station. Please don't take this the wrong way we want our men and women to be fit for the job at hand but we are limited by the facilities we currently have.
 - This proposed standard is striving for absolute perfection and is raising the bar for both employer and employee to an unattainable level which will result in a loss of dedicated knowledgeable individuals who know how to do their jobs in the protection of lives and property every day.
 - The documentation requirements alone for the proposed standard would require at least one FTE for every emergency service provider affected by this standard.
-

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Eric Day

SEE ATTACHED See Bullet Points from the southern district. Fw: Try these

Saved on: Thu 10/21/2021 9:33 AM

REPLYREPLY ALLFORWARD

Mark as unread

Day, Eric <Eric.Day@clintoncountygov.com>

Wed 10/20/2021 7:46 PM

Inbox

To:

Au Sable Forks Fire District;

From: Donoghue, Kelly <Kelly.Donoghue@clintoncountygov.com>;
OES - Max Thwaits <maxthwaits3@gmail.com>;

Lou,

I have read the summary document as best I can and my first reaction is WOW!!!

My input is not detailed but I offer the following in reference to the proposed OSHA standards with regard to the fire service and other NGA agencies that might assist in emergency response. I feel that the proposed standards will be very cumbersome to meet on the part of the majority of the smaller rural or even suburban fire departments in our County, New York State and the nation in total, to **day** nothing about the non-traditional responders.

Fire departments these **days**' work very hard to try and maintain a level of standard in concert with the various rules and regulations and standards that are out there today including NFPA, local codes, OSHA and others. In many cases small volunteer departments, small career departments and even larger volunteer, career or combination departments struggle and at very best meet some of the regulations some of the time but very infrequently if ever meet all the regulations all the time.

The regulations that currently apply to the fire service are hard enough to meet. I do not see many departments organized in the fashion that they are today being able to comply with all of the facets of this new standard as proposed. That said many of the

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concepts in this standard are things that we are already attempting to meet or meet through some other means maybe to a lesser level. To that extent we struggle very much trying to do that.

I think the cost estimates for the various sections of the proposed standard are woefully inadequate many smaller departments or agencies would likely have to hire full-time personnel in order to even try to completely comply and accomplish all of the tasks and requirements that are outlined. Hiring of personnel in New York state for many departments is a challenge in that civil service becomes a component and wages and benefits become a huge component as well which are costly and not in the budget of many small volunteer departments or even smaller career departments. A new employee at an administrative level or even a fire chief and a small volunteer department could come at a cost of between \$80,000 to \$100,000 per year just simply to hire the person this in some cases might double the size of a small community fire department budget.

My thinking would be that the existing standards and regulations that are already in place could be better achieved with assistance from the federal government the state government local government and would create a safer environment with the fire service more so than applying these additional burdens as proposed.

Eric Day

Clinton County

Office of Emergency Services

Plattsburgh, New York

Direct# 518-565-4792

eric.day@clintoncountygov.com

Re: URGENT OSHA proposed revisions impacting YOU

Inbox



Comments

Fri, Oct 15, 9:42 AM
(9 days ago)

Wallace Day
Chairman of the Board of Fire Commissioners
South Plattsburgh Fire District, Inc.

I read thru a good portion of the material that was sent to me. And my initial reaction consisted of a single word: BAD!!
But as you say, expressing anger or disgust isn't going to "hold water" insofar as attempting to bring this to a stop.

As a Commissioner and Board Chair for a smallish rural/suburban Fire District (\$750,000 +/- budget) [but having said that, we are the 2nd largest District in Clinton County] my overriding thought is the cost of implementation to our taxpayers. There is no way to easily put a dollar cost on this, but it will clearly result in a HUGE increase in our Fire District tax rate. And it needs to be made clear (as will be the case with EVERY fire department entity in NYS) that essentially EVERY SINGLE DOLLAR of our budget comes from LOCAL PROPERTY TAXES. So, it's fairly simple to conclude that the cost of the mandates that the proposed regulations will impose is one large factor which needs to be considered.

But dollar cost is but one factor. The other factor is that such mandates will lead to the necessity for paid staff. And going beyond the resultant cost of paid firefighter staff is the fact that (even if the smallest entities could afford such) the available on-duty paid staff available for response to an incident will be tiny in comparison with the "typical" volunteer response for even the smallest of volunteer-staffed departments. A three firefighter "on duty" staff would very likely not exceed 3 people (and likely more commonly 1 or 2 people. Contrast to 8 people and quite commonly many more than that.

And utilizing the mutual aid systems that almost all agencies participate in, a "secondary response" will often bring an additional 6 to 8 (and often many more) accompanied by several more apparatus.

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But, if forced (by government mandates and cost factors) this wonderful mutual aid resource would disappear to be replaced by a response from a mutual aid agency with a single apparatus with 1 to 3 firefighters (and likely coming from a considerably further distance), thus further deleting available resources (in the event of a second incident or additional manpower or equipment needs at the original incident.

I sincerely hope my narrative will be beneficial in our standing up in opposition to what is being proposed.

Sincerely,

Wallace Day, AFDNYS Director, Region 11, Chairman South Plattsburgh Fire District Board; Past Chief South Plattsburgh Fire Department (1978-1993); Fire Investigator, Clinton County OES 1996-present)
Email (as shown in the address above) wday@afdsny

On Fri, Oct 15, 2021 at 8:57 AM Association of Fire Districts of the State of New York <ddenniston@afdsny.org> wrote:

End of comments, thank you for listening.

Questions & Comments can be directed to:

Louis Garso @ garso@affdcomm11.net

Thank you

Lou Garso

8. Reginald Allen

From: [Harmon, Anissa - OSHA](#)
To: [Mockler, Thomas - OSHA](#)
Subject: Reg Allen: Comments
Date: Monday, November 8, 2021 11:25:13 AM
Importance: High

Tom,

Forwarding comments from Reg Allen. Comments are below.

From: Lundegren, Bruce E. <Bruce.Lundegren@sba.gov>
Sent: Monday, November 1, 2021 10:51 AM
To: Reg Allen <rallen@chsmobilehealth.org>
Cc: Stone, Jessica - OSHA <Stone.Jessica@dol.gov>; Mockler, Thomas - OSHA <Mockler.Thomas@dol.gov>; Harmon, Anissa - OSHA <Harmon.Anissa@dol.gov>
Subject: RE: OSHA SBREFA Panel on Emergency Response - Tomorrow's (10/14 Video/Conference Call

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Thank you, Reg. I am copying OSHA so these comments can be included in the panel report. Thank you again for your participation as a SER to the panel.

Bruce

From: Reg Allen <rallen@chsmobilehealth.org>
Sent: Sunday, October 31, 2021 10:46 PM
To: Lundegren, Bruce E. <Bruce.Lundegren@sba.gov>
Subject: Re: OSHA SBREFA Panel on Emergency Response - Tomorrow's (10/14 Video/Conference Call

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Bruce,

The concerns I brought forth at the listening session:

- Cost: Rural EMS and Fire departments are closing in large numbers. Both financial and membership hardships are causing the closures. Adding any additional regulation or cost will only exacerbate the difficulties that all rural first response departments face.

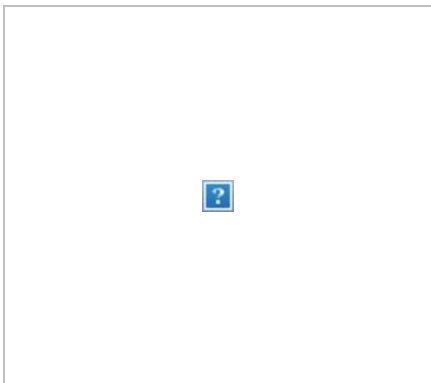
- Agencies with less than 50 members are already in the worst situation, but any additional cost or regulation will negatively impact all first response agencies.
- It is possible that smaller first response agencies will simply ignore the new regulation until they are inspected. Then they will close due to fines or inability to meet the requirements.
- The cost estimates for a volunteer fire dept are 200k. Many of these departments run on donations and chicken barbeques to survive financially. Volunteer ambulance companies are in the same boat. Often running out of small outdated facilities.
- The cost for most career departments will be passed on to tax payers as many of the career departments are municipalities.
- Health Care System at large: The entire health care system is crisis. EMS has been especially hard hit with record numbers of paramedics leaving the profession. The focus should be on recruitment and retention, not on more regulation.

Thank you for allowing me to participate in the listening session. Let me know if you need anything further.

Reg

.....
REG ALLEN

Chief / CEO / BS / NREMT-P
280 Calkins Road, Rochester NY 14623
P: [585-334-4190](tel:585-334-4190) **F:** [585-334-8172](tel:585-334-8172)



"Even if you are on the right track, you'll get run over if you just sit there" Will Rogers

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APPENDIX D

Preliminary Initial Regulatory Flexibility Analysis
of the Draft OSHA Standard for
Emergency Response

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I. Introduction

OSHA is considering promulgating a new standard to protect workers who respond to emergency incidents. The standard would ensure that covered employers and workers are safer in their workplaces and appropriately prepared for emergency incidents. This standard, called Emergency Response (ER), would cover workers who respond to emergency incidents as part of their regularly assigned duties and those who may be called upon, from time to time, to respond to emergencies. This new standard would replace, in its entirety, existing 29 CFR 1910.156, Fire brigades. It would apply only to entities that are already required to comply with Federal OSHA or State plan regulations. Many entities with emergency responders (primarily State, county, and municipal government employers) do not fall under OSHA's jurisdiction.

Some employers that provide emergency services are already covered in certain respects by other OSHA standards, including 29 CFR 1910.151, Medical services and first aid; 29 CFR 1910.119, Process Safety Management of highly hazardous chemicals (PSM); 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPR); 29 CFR 1910.146, Permit-required confined spaces; 29 CFR 1910.272, Grain handling facilities; 29 CFR 1926 Subpart AA, Confined spaces in construction; 29 CFR 1926 Subpart P, Excavations; and 29 CFR 1915 Subpart P, Fire protection in shipyard employment. The draft Emergency Response standard, which, as previously noted, is a complete update of the existing 29 CFR 1910.156, is designed to cover emergency response activities that are outside the scope of these standards. Further discussion of Scope follows below.

Some employers designate and train certain employees to assist in the orderly evacuation and rescue of other employees during an emergency (29 CFR 1910.38, Emergency action plans), or to use portable fire extinguishers (29 CFR 1910.38, and 1910.157, Portable fire extinguishers). These specific duties would also be outside the scope of the draft Emergency Response standard.

As a program standard that is predominantly performance based, the draft Emergency Response standard parallels many existing National Fire Protection Association (NFPA) standards. Many of the draft standard's provisions are based on or incorporate by reference the NFPA standards. (The Draft Regulatory Language document, included in the packet of SBAR Panel documents, includes references to the standards on which the draft provisions or groups of provisions are based.) NFPA provides free access to read all of their standards at: <https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/Free-access>. The purpose of the draft Emergency Response standard is to ensure that employers appropriately prepare employees whose duties include mitigation of emergency situations.

The draft Emergency Response standard would apply to employers if the employees provide mitigation in emergency response situations and the activity is currently covered by 29 CFR 1910.156, or is not covered by another OSHA standard. Employers whose employees only

provide a service that is already completely covered by another OSHA standard would not be covered by the draft Emergency Response standard.

For example, an employer who only provides first aid kits and persons trained to render first aid to employees in accordance with 29 CFR 1910.151 Medical services and first aid, would not be covered by the draft Emergency Response standard. But an employer whose employees provide emergency medical service beyond the scope of 29 CFR 1910.151, such as providing medical care outside of the employer's workplace, or providing emergency medical transport would be required to comply with the draft Emergency Response standard.

Likewise, if an employer has employees who mitigate hazardous chemical releases in accordance with 29 CFR 1910.120 (HAZWOPR), the employer would not be covered by the draft Emergency Response standard since these activities are already regulated by an OSHA standard. But if the employer's HAZWOPR responders are also fire fighters on the fire brigade, then the additional emergency response duties as fire fighters would be covered by the draft Emergency Response standard.

The following paragraphs discuss the proposed requirements for the standard. However, not all paragraphs would apply to all employers OSHA proposes to cover by the rulemaking. Paragraphs (b) through (q) apply to employers whose workers respond to emergency situations as part of their regularly assigned duties. Paragraphs (r) through (v) do not apply to those employers. Paragraphs (b), (c), and (r) through (v) apply to employers that provide Skilled Support Workers and equipment to assist emergency responders at incident scenes. Paragraphs (d) through (q) do not apply to Skilled Support Employers.

In accordance with the Regulatory Flexibility Act (RFA) (Sections 601 through 612 of Title 5 of the United States Code), OSHA is convening a Small Business Advocacy Review Panel (SBAR Panel). This Panel consists of representatives from OSHA, the Small Business Administration Office of Advocacy (SBA's Office of Advocacy, or Advocacy), and the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB). The SBAR Panel identifies individuals who are representatives of affected small entities, termed Small Entity Representatives (SER). Small entities, under the RFA, include small businesses, small not-for-profit enterprises, and small government jurisdictions. For purposes of defining small businesses, OSHA uses the industry-specific size standard published by SBA (for more information, visit <https://www.sba.gov/content/summary-size-standards-industry-sector>).

The SBAR Panel has several purposes. First, the Panel provides an opportunity for affected small employers, the SBA's Office of Advocacy, and OIRA to provide comments to OSHA. Second, by reviewing OSHA's potential regulatory framework for an emergency response standard and estimates of the potential impacts of that rule, SERs and the Panel can offer recommendations to OSHA on ways to tailor the rule to make it more cost-effective and less burdensome for affected small entities. Third, early comments permit identification of different regulatory alternatives the

agency might consider. Finally, the SBAR Panel report can provide specific recommendations for OSHA to consider on issues such as reporting requirements, timetables of compliance, and whether some groups -- including small entities -- should be partially or entirely exempt from any proposed rule.

Following the SBAR Panel, if the agency were to move forward with rulemaking, OSHA's next step would be to publicly propose the new rule in the Federal Register. The Preamble to the proposed rule would include an Initial Regulatory Flexibility Analysis (IRFA) to focus attention on the potential impacts on small entities. The IRFA would include a description of the Panel's recommendations and OSHA's responses to those recommendations. Sections 603(b) and (c) of the RFA set out the requirements for the IRFA:

(b)(1) a description of the reasons why action by the agency is being considered;

(b)(2) a succinct statement of the objectives of, and legal basis for, the proposed rule;

(b)(3) a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

(b)(4) a description of the proposed reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirements and the type of professional skills necessary for preparation of the report or record;

(b)(5) an identification, to the extent practicable, of all relevant federal rules that may duplicate, overlap, or conflict with the proposed rule; and

(c) a description of any significant alternatives to the proposed rule that accomplish the stated objectives of applicable statutes that minimize any significant economic impact of the proposed rule on small entities.

An alternative under Section 603(c) need not be unique to small entities. Rather, an alternative that meets OSHA's goals and reduces impacts for all affected entities can and should be considered as part of the Panel and regulatory flexibility analysis process.

Under Section 609(b) of the RFA, the SBAR Panel must be provided any information that OSHA has available on issues related to paragraphs (3), (4), and (5) of Section 603(b), as well as Section 603(c), of the RFA. The SBAR Panel collects comments on these issues.

This preliminary IRFA (PIRFA) document provides the information required under Section 609(b) of the RFA to the members of the SBAR Panel and to individual SERs who have agreed to participate in this SBAR Panel. The PIRFA document also satisfies the RFA's legal requirement that OSHA provide certain information to the Chief Counsel for Advocacy. OSHA

has placed all references in this document in the public docket, OSHA-2007-0073 (72 FR 51735, Sept. 11, 2007), and is available to help SERs obtain any references they would like to see. All non-copyrighted references will be available online at regulations.gov in the docket for this potential rulemaking. Several copyright protected NFPA standards are included in the docket. NFPA provides free public access to view their standards at www.nfpa.org. Other copyrighted materials are available for inspection through OSHA's docket office.

II. Summary of the Draft Emergency Response Standard

a. Introduction

This section provides an overview of the potential requirements OSHA is considering for protecting emergency responders. This potential regulatory framework is based on industry best practices, comments received in response to the request for information (RFI) published by OSHA in 2007, and the recommendations of the National Advisory Committee on Occupational Safety and Health (NACOSH). The potential regulatory framework was drafted by a NACOSH Subcommittee (Subcommittee).

The purpose of the Subcommittee was to develop recommendations, including draft regulatory language for a potential proposed rule. The 12 Subcommittee participants were subject matter experts from major stakeholder entities that represented a broad range of emergency response experts, who provided balance and a diversity of views. The full Subcommittee met for 12 days in six in-person meetings and held numerous sub-group teleconference over the course of a year. The members heard and discussed reports from the sub-groups, and deliberated on various issues, as they developed their recommendations and proposed regulatory language.

Below OSHA summarizes the regulatory language developed by the Subcommittee that, based on research, the agency currently believes could be appropriate in an emergency response standard. These potential provisions are discussed in terms of what an employer "would" be required to do, but OSHA emphasizes that thoughts about what might be in a standard are preliminary and the potential regulatory framework has been developed for the purpose of generating discussion and receiving feedback at this early stage. OSHA seeks comment on this framework and about additional possible approaches to address the hazards associated with emergency response. It will carefully consider all input received during this SBAR Panel process and throughout the rulemaking process if the agency decides to proceed to a proposed and, ultimately, a final rule.

b. Scope, Duty

Scope

OSHA is considering a standard that would apply to:

- Emergency Service Organizations (ESO), such as entities that provide one or more of the following services as a primary or secondary function: firefighting, fire rescue, emergency medical service, technical rescue (rope/high angle, cave, etc.), vehicle/machinery rescue, water rescue/recovery (land/shore based, swiftwater, underwater), and search and rescue (urban, mountain, wilderness).
 - This standard would not apply to law enforcement employers solely engaged in law enforcement/crime prevention activities. It would apply to law enforcement employers that also provide services such as the examples of ESO services listed above, but only with respect to those services (such employees are sometimes known as Public Safety Officers).

- General industry employers that have or that establish a Workplace Emergency Response Team, also known by other titles such as: industrial, emergency or facility fire brigade; industrial fire department; emergency response team; fire team; or plant emergency organization. (For the purposes of this standard, an employer with a Workplace Emergency Response Team is considered to be an “ESO” and the employees assigned to the team are considered to be “responders.”)
 - This standard would not apply to employers that provide only those emergency services which are already covered in certain respects by other OSHA standards, including employers who only provide first aid kits and persons trained to render aid to employees in accordance with 29 CFR 1910.151, Medical services and first aid; Process Safety Management employers who designate responders in accordance with 29 CFR 1910.119, Process Safety Management of highly hazardous chemicals (PSM); employers who only perform hazardous waste operations and emergency response in accordance with 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPR); employers who designate employees to enter confined spaces in accordance with 29 CFR 1910.146, Permit-required confined spaces; employers whose employees enter grain handling facilities in accordance with 29 CFR 1910.272, Grain handling facilities; employers who designate employees to enter confined spaces in accordance with 29 CFR 1926 Subpart AA, Confined spaces in construction; employers who perform operations in excavations in accordance with 29 CFR 1926 Subpart P, Excavations; and shipyard employers with fire brigades in accordance with 29 CFR 1915 Subpart P, Fire protection in shipyard employment.
 - This standard would not apply to employers, without Workplace Emergency Response Teams, that designate and train certain employees to assist in the orderly evacuation or rescue of other employees during an emergency (29 CFR

1910.38, Emergency action plans), for example, such as office spaces with floor wardens; or to use portable fire extinguishers (29 CFR 1910.38, and 1910.157, Portable fire extinguishers).

- This standard would apply to employers with Workplace Emergency Response Teams, but would not apply to the employees who are only designated to assist with orderly evacuation or rescue of other employees during an emergency (29 CFR 1910.38), and employees designated to use portable fire extinguishers (29 CFR 1910.38, and 29 CFR 1910.157, Portable fire extinguishers).
- General industry, construction, and maritime industry employers that expect, based on past experience, a mutual aid agreement (interagency agreement), or a contract, to provide skilled support personnel at an emergency incident. (For the purposes of this standard, an employer with skilled support personnel is considered to be a “Skilled Support Employer” and each employee assigned to provide the skilled support is considered to be a “Skilled Support Worker.”)
 - This standard would not apply to employers during post-emergency incident activities. Typically, Skilled Support Employers are released from the incident scene before or upon termination of the incident by the Emergency Service Organization’s Incident Commander. Post-emergency incident activities begin when the Incident Commander of the emergency incident terminates command.
 - When a Skilled Support Employer will remain at the location of the incident during post-emergency incident activities, the employer would no longer be under this standard and would need to comply with all other OSHA standards (Parts 1910, 1926) as appropriate to the industry.

Duty

Each employer covered within the scope of this standard would need to develop in writing and implement an Emergency Response (ER) program to provide protection for each responder/employee who is designated to operate at an emergency incident.

c. Definitions of Frequently Used Terms

The following are definitions of terms that OSHA frequently uses in the draft standard and in developing estimates of costs. A full list of definitions and acronyms is available in Section X, Appendices. These definitions are based on definitions from several NFPA standards related to emergency responders, definitions used in other OSHA standards, definitions used by other agencies such as the Department of Homeland Security (DHS), and definitions used by affected entities.

Community vulnerability and risk assessment. The process of identifying, quantifying, and prioritizing the potential and known vulnerabilities of the overall community; structures, inhabitants, infrastructure, organizations, hazardous conditions or processes. The assessment should include human-created vulnerabilities and natural disasters.

Emergency incident. Any situation to which an Emergency Service Organization or Skilled Support Employer responds in order to deliver emergency services, such as intervention for rescue, fire suppression, emergency medical services (EMS), special operations, and other forms of hazard control and mitigation.

Emergency Service Organization. An organization whose employees, as part of their regularly assigned duties, respond to emergency incidents to provide services such as rescue, fire suppression, emergency medical care, special operations and other forms of hazard control and mitigation. It does not include organizations solely engaged in law enforcement, crime prevention, or similar activities.

Employee. For the purposes of this standard, an employee is referred to as a responder or a Skilled Support Worker (SSW).

Employer. For the purposes of this standard, an employer is referred to as an Emergency Service Organization (ESO) or a Skilled Support Employer (SSE).

Facility vulnerability and risk assessment. The process of identifying, quantifying, and prioritizing the potential and known vulnerabilities of the overall facility, structures, inhabitants, infrastructure, hazardous conditions, or processes. The assessment should include human-created vulnerabilities and natural disasters.

Post-Emergency Incident Activity. Any activity that occurs after the ESO Incident Commander releases the Skilled Support Employer's assets, or terminates the ESO's command.

Pre-Incident Plan. A document developed by gathering general and detailed data that is used by responding personnel in effectively managing emergencies for the protection of occupants, responding personnel, property, and the environment. This plan is developed before an incident occurs and is intended to be used during an incident to aid in mitigation.

Qualified Healthcare Professional. A physician, physician's assistant, occupational health nurse, or other medical professional who possesses a license, professional qualifications, or certification required to practice medicine in the ESO's or SSE's jurisdiction, and who is knowledgeable in the physical requirements needed to perform the duties designated to responders.

Responder. An employee who is, or will be, assigned to perform duties at emergency incidents.

Skilled Support Employer (SSE). An employer that has a primary function other than providing an emergency service, but that designates one or more employees to provide a service at the scene of an emergency incident. Examples include, but are not limited to, employers that provide cranes, heavy duty wrecker/rotator tow vehicles, construction equipment, utility service (gas, water, electric), and public health employers.

Skilled Support Worker (SSW). An employee of a Skilled Support Employer that is skilled in certain tasks or disciplines that can support an ESO (such as operators of heavy duty wrecker/rotator tow vehicles, mechanized earth moving or digging equipment, crane and hoisting equipment, health care professionals, technical experts), who is needed to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an ESO responder, and who will be or may be exposed to the hazards at an emergency incident scene.

Workplace Emergency Response Team. A group of employees who prepare for and respond to emergency incidents in the workplace. May also be known by other titles such as industrial, emergency or facility fire brigade; industrial fire department; emergency response team; fire team; plant emergency organization.

The following paragraphs, (d) through (q), apply to employers that are, by definition, Emergency Service Organizations.

d. Responder Participation

It is important for responders to participate in the development of the ESO's Emergency Response program. The ESO would be required to:

- Consult with responders in developing and updating the Emergency Response program;
- Involve responders in implementing and evaluating the program, and in the review and change process;
- Request input from responders regarding workplace modifications;
- Involve responders in ESO inspections and incident investigations;
- Encourage responders to report safety and health concerns, such as hazards, injuries, illnesses, near misses, and deficiencies in the program;
- Respond to such reports in a reasonable period of time; and
- Post procedures for reporting safety and health concerns in a conspicuous location.

Under this draft standard, ESOs would be prohibited from retaliating or discriminating against responders for participating in the program, including reporting safety and health concerns. ESOs would also be prohibited from engaging in practices or implementing policies that deter responders from participating in such activities.

e. Establishment of Emergency Service(s) Capability

It is important for each ESO to gather information for a community or facility vulnerability and risk assessment for its service area. The assessment would be conducted by the ESO. The ESO may be able to obtain information from the Local Emergency Planning Committee (LEPC), local or state emergency management agency, utility companies, etc. The assessment is necessary for the ESO to establish standards of response and determine the ability to match the community or facility's risks with available resources. For the purposes of this standard, an ESO whose primary service area is a community (municipality, county, parish, region, state) would assess the community it serves. An ESO whose primary service area is, for example: a manufacturing facility, a military facility, or a research and development facility would assess that facility.

The assessment would include the following considerations:

- Civilian and worker injury or loss of life;
- Property damage or loss;
- Critical infrastructure damage or loss; and
- Environmental damage or loss.

Factors taken into account when developing the assessment would include:

- Size, height, construction types, and configuration of buildings;
- Special life safety risks, for example: hospitals, nursing homes, prisons, etc.;
- Proximity between structures;
- Occupancy classifications;
- Fixed facilities;
- Transportation modes; and
- Other hazards.

The community or facility vulnerability and risk assessment process would identify the Authority Having Jurisdiction (AHJ) for command responsibility during mitigation activities, and ensure all activities occur within the framework of the existing AHJ, legislation, or other legal restrictions. The vulnerability and risk assessment would identify how the ESO incorporates itself into large-scale mitigation efforts managed by Federal or State agencies that have the authority to manage larger scale incidents.

The ESO would evaluate the resources needed, including personnel and equipment, for mitigation of emergency incidents identified in the community or facility vulnerability and risk assessment, and establish the type(s) and level(s) of emergency service(s) it is capable of performing. The type of service identifies the broad category of service to be provided; for

example, firefighting, technical rescue, emergency medical service. The level of service identifies narrow categories of service to be provided within each type. The following is a short, non-inclusive list of examples of types and levels of service:

- Firefighting (type of service)
 - Incipient (level of service)
 - Interior (level)
 - Exterior (level)
 - Aircraft (level)
 - Wildland (level)
 - Marine (level)
 - Proximity (level)
- Emergency Medical Service (type of service)
 - Basic life support emergency response and transport – ground based (level of service)
 - Advanced life support emergency response and transport – ground based (level)
 - Emergency response and transport – aircraft based (level)
- Search and Rescue (type of service)
 - Urban (level of service)
 - Mountain (level)
 - Wilderness (level)
 - Marine (level)
- Technical Rescue (type of service)
 - Swiftwater (level of service)
 - High angle (level)
 - Vehicle/Machinery (level)
 - Cave (level)

Additionally, within the type and level of service designated, the ESO would establish tiers of responder responsibilities, duties, qualifications and capabilities. Each tier in ascending order would have a higher level of training and/or certification needed, and more complex duties assigned, than the previous tier. OSHA believes that the tier concept is essentially already in place in most organizations; with those in the top tier having the highest level of training/professional qualification and responsibility. This tier system allows the ESO the ability

to establish different levels of training, health and fitness, and medical requirements for different types of responders. These requirements would typically decline going down the list of tiers, thus reducing the burden on ESOs.

In the first example below, a responder in the top Technician tier would be trained and/or certified, as appropriate, to perform all the duties of the lower tiers: Operation, Awareness, and Support, with Support needing minimal training and having the least complexity of responsibilities. Examples of tiers include, but are not limited to:

- Fire/Rescue
 - Technician
 - Operation
 - Awareness
 - Support

- Emergency Medical Services
 - Physician
 - Nurse
 - Paramedic
 - Advanced EMT
 - EMT
 - EMR
 - Support

*[Note: The concepts in the preceding paragraphs are carried through the rest of the document. Essentially, almost everything the ESO would be required to do is based on the **type(s)** and **level(s)** of emergency service(s) it provides. Requirements specific to responders, such as medical, fitness, training, certifications, etc., are determined based on the differences between **tiers** of assigned duties and responsibilities.]*

Based on the assessment, the ESO would determine what services it is unable to provide, identify how those service(s) can be provided through neighboring ESOs, and develop written mutual aid (interagency) agreements. The mutual aid agreements would need to include, but not be limited to, the following issues:

- Legal authorizations;
- When and how to request assistance;
- Operating procedures;

- Prohibitions against self-deployment to an incident in another ESO's jurisdiction;
- Liabilities for injuries, disabilities, and deaths;
- Cost of service;
- Staffing, and equipment including the resources to be made available;
- The designation of the incident commander; and
- Responder training and qualifications.

Occasionally, the ESO may need to call for services that are beyond the scope of typical emergency services. In those situations, the ESO may require the services of an entity that is able to provide skilled support. Again, based on the assessment, the ESO would identify what reasonably anticipated service(s) would be needed from a Skilled Support Employer (SSE). The ESO would:

- Identify the type(s) of skilled support the ESO anticipates it will need.
- Develop written service agreements/contracts with the SSE(s).
- Ensure the SSE is advised of likely emergency incidents to which it may be called to respond.
- Provide SSEs with information regarding services, required and special equipment, PPE needs, and other information as may be needed.

This is the point where the ESO/SSE relationship begins; in advance, during the ESO's preparation for anticipated events. This is the point where the SSE would need to determine if it can meet the requirements of being an SSE (in accordance with the requirements below) and enter into an agreement/contract with the ESO to be an SSE. In some situations, the skilled support entity may have previously provided skilled support at an emergency incident and can anticipate being designated as an SSE subject to the regulatory requirements based on prior patterns of engagement with ESOs.

An entity capable of providing skilled support that has not previously provided skilled support or agreed or contracted to be an SSE would not need to meet the SSE requirements below if it was called to provide assistance at emergency incident.

f. Organization Risk Management Plan

It is important for the ESO to develop a comprehensive risk management plan for the organization itself. This plan would cover, at a minimum, risks associated with:

- Administration;
- Facilities;

- Training;
- Vehicle operation;
- Personal protective equipment;
- Operation at emergency and non-emergency incidents; and
- Other related activities.

The plan would include, at a minimum, the following components:

- Hazard identification – actual and potential hazards;
- Risk evaluation – likelihood of occurrence of a given hazard and severity of consequences;
- Establishment of priorities for action – the degree of a hazard based upon the frequency and risk of occurrence;
- Risk control techniques – solutions for elimination or mitigation of potential hazards; implementation of best solution;
- Risk management monitoring – evaluation of effectiveness of risk control techniques;
- Personal Protective Equipment hazard assessment;
- Respiratory protection for responders that meets the requirements of §1910.134;
- Infection control, equivalent to the requirements of NFPA 1581, 2015 ed., that identifies, limits, or prevents the exposure of responders to infectious and contagious diseases; and
- Protection for responders from bloodborne pathogens that meets the requirements of §1910.1030.

g. Responder Medical/Fitness Requirements

It is important for emergency responders to be healthy and physically fit in order to adequately perform the duties assigned to them. Since not all responders will have the same duties, not all responders should have to meet the same requirements for health and fitness. Based on the type and level of service(s) established by the ESO, the ESO would establish minimum medical requirements based on the tiers of responder duties, tasks and responsibilities. A qualified healthcare professional would perform the medical evaluation of the responders. The medical evaluation would include a medical and vaccination history, physical examination, and any laboratory tests required to detect physical or medical conditions that could adversely affect the responder's ability to safely perform the essential job functions. These provisions of the draft standard are based on NFPA provisions and NIOSH recommendations made as part of their Firefighter Fatality reports and were recommended by the NACOSH subcommittee.

Components of the medical evaluation program would comply with the corresponding requirements of §1910.95, Occupational noise exposure; §1910.134, Respiratory protection; and

§1910.1030, Bloodborne pathogens. The medical evaluation would be performed for each responder as a baseline for surveillance and annually thereafter. Also, each responder would be evaluated following an occupational exposure, illness, injury, or protracted absence from the job.

The ESO would establish minimum physical performance requirements for responders and ensure responders meet the requirements before beginning training or becoming a responder if already trained.

To develop and maintain a level of fitness that allows responders to safely perform their duties, the ESO would implement a health and fitness program. The fitness levels would be determined by a qualified health care professional. The program would include at least the following components:

- Assignment of a health and fitness coordinator;
- Periodic (not to exceed 3 years) fitness assessment of each responder;
- Exercise training;
- Education and counseling regarding health promotion; and
- A process for collecting and maintaining health-related fitness data.

OSHA believes that responder behavioral health and wellness is important to ensuring responders are able to adequately perform their duties. ESOs would provide access for responders to a confidential behavioral health and wellness program. The program would include the following components as a minimum:

- The capability to provide diagnostic assessment;
- Referrals to basic counseling;
- Crisis intervention training;
- Referral to counseling services for issues such as alcohol and substance abuse and substance use disorder, stress and anxiety, depression, and personal problems that affect work performance;
- Prevention strategies and health promotion activities related to identified risk factors for emergency responders' health and safety; and
- Protocols to address occupational exposure to atypically stressful events.

The ESO would maintain a permanent health database for analysis of factors pertaining to the overall group of responders, as well as a confidential file for each responder.

h. Responder Training and Qualifications

It is important for responders to be properly trained and qualified to perform the duties, tasks, and responsibilities assigned to them. The ESO would establish the minimum level of knowledge and skills required for each responder to participate in emergency operations, based on the type, level, and tier of service(s) performed by the ESO. The minimum knowledge and skills required would differ among responders, based on the job performance requirements for differing duties, tasks, and responsibilities assigned to them.

The ESO would provide initial training, ongoing training, refresher training, education, and professional development for each responder commensurate with the performance of expected duties and functions assigned to them. Training would also include such topics as the ESO's:

- Risk management plan;
- Safety and health policy;
- Incident management system, accountability system, Mayday and Rapid Intervention Team procedures; safe exit and accountability during rapid evacuation, equipment failure, or other dangerous situations and events; and
- Awareness of the hazards of confined spaces and hazardous chemicals.

The ESO would establish the professional qualifications for responders commensurate with the performance of expected duties and functions of the ESO. The NFPA has established professional qualifications standards for a broad spectrum of emergency responders. The ESO could choose to follow the NFPA qualifications or develop comparable standards.

The ESO would also ensure responders maintain proficiency in the skills and knowledge commensurate with the performance of their duties and functions by providing periodic skills checks and monitoring training progress.

i. Facility Preparedness

It is important for employers to provide safe and healthful facilities where their employees work. The ESO would need to comply with 29 CFR Subpart E (Means of Egress) and other existing safety and health regulations. OSHA is considering the following requirements specific to ESO facilities:

- Provisions for disinfection, cleaning, and storage of equipment.
- Slide poles would be prohibited in new ESO facilities. Stairs, slides, or chutes would be used to provide access to lower levels.
- Implementation of a system to identify and correct safety and health hazards at the ESO's facilities.
- Provision of smoke alarms for facilities with sleeping areas.

- Provision of carbon monoxide detectors for facilities with sleeping and living areas.
- Provision of an automatic sprinkler system for new facilities with sleeping areas.

j. Equipment Preparedness (including PPE)

ESOs utilize a wide variety of equipment to deliver the broad range of services they provide. To ensure the equipment is safe for responders to use, newly purchased or newly acquired firefighting, rescue, technical rescue, EMS and other emergency response equipment would need to meet the design and manufacturing requirements of a nationally recognized consensus standard or applicable OSHA standard, where applicable. Additionally, ESOs would be required to inspect, maintain, functionally test, and service test equipment as follows:

- At least annually;
- In accordance with manufacturer's instructions and industry practices; and
- As necessary to ensure equipment is in safe working order.

Any equipment found to be defective or in an unserviceable condition would be required to be immediately removed from service.

In the draft standard, the term personal protective equipment (PPE) (sometimes known as personal protective ensemble), includes protective clothing, protective elements and equipment, and respiratory protective equipment. The ESO would be required to conduct a PPE assessment to determine what is needed to protect responders, based on the type and level of service being provided, and to provide the PPE at no cost to the responders.

New PPE would need to meet the requirements of the corresponding national consensus standard current at the time the Emergency Response standard is promulgated, and the applicable OSHA standards. Existing PPE would need to meet the requirements of the corresponding standard that was current when the PPE was manufactured.

The ESO would be required to ensure that responders properly use or wear the PPE. The ESO would also need to provide for cleaning, care and maintenance, and ensure that PPE is gross decontaminated on the incident scene.

k. Vehicle Preparedness and Operation

An important aspect for most ESOs is transportation of the responders to the scene of the emergency incident and use of vehicles at the scene. Vehicles need to be in a safe operating condition to ensure the safety of the responders using them.

To ensure vehicles are prepared for use by responders, the ESO would be required to:

- Establish and implement standard operating procedures (SOP) to inspect, maintain and repair, or remove from service each vehicle that responders use;
- Ensure each riding position is provided with a properly operating seat and seatbelt;
- Service test aerial devices on apparatus and vehicle mounted pumps, as directed by the manufacturer or in accordance with the appropriate national consensus standard.

It is important for vehicles to be driven and operated in a safe manner. The ESO would be required to:

- Ensure each vehicle is driven/operated by a responder who has completed a training program on operating the vehicle;
- Develop and implement SOPs for safely driving vehicles during non-emergency travel and emergency response, and include criteria for:
 - Vehicle speed;
 - Crossing intersections;
 - Traversing railroad grade crossings;
 - Use of emergency warning devices; and
 - Backing up of vehicles.
- Ensure the driver does not move the vehicle until all persons are seated and belted or otherwise restrained.
- Establish a procedure that provides alternative means for ensuring responder safety when it is not feasible for responders to be seated and belted, such as when standing as honor guards, parades, transporting people acting as holiday figures (i.e.: Santa Claus, Easter Bunny, King Neptune, etc.), and for vehicles without seatbelts.

1. Pre-Incident Planning

As noted in the Establishment of Emergency Service(s) paragraph above, OSHA believes it is important for ESOs to be aware of the hazards they may face, in order to prepare for emergency incidents. Part of that preparation includes identifying locations and facilities that need special attention, and developing plans for handling emergency incidents at those locations or facilities. These plans are known as Pre-Incident Plans (PIPs).

ESO's would be required to develop PIPs for significant structures, facilities, locations, and infrastructure within their community or facility, as determined during the community or facility vulnerability and risk assessment. Also, a PIP would be required for each facility that is subject to reporting requirements under the Emergency Planning and Community Right-to-Know Act, also known as the Superfund Amendments and Reauthorization Act of 1986. PIPs would include

guidance for actions to be taken, depending on the situation, if the scope of the incident is beyond the capabilities of the ESO.

The PIPs would need to be reviewed periodically in order to ensure that information is correct and up to date. It is important for ESOs to disseminate the PIPs to surrounding ESOs, as necessary, and ensure the PIPs are accessible and available to responders operating at emergency incidents.

m. Standard Operating Procedures for Emergency Incidents

It is important for ESOs to have SOPs for mitigating emergency incidents they encounter. These procedures would provide a standard set of actions that form the core of the actions that responders would take at emergency incidents. The SOPs would need to be flexible and expandable in order to be applicable to unforeseen events. The ESO would develop and implement SOPs:

- For operating at emergency events that the ESO foreseeably expects to encounter, based on the community or facility vulnerability and risk assessment;
- That describe the actions to be taken in situations involving special hazards (for example storage and use of flammable liquids and gases, toxic chemicals, radioactive sources, water reactive substances, inert atmospheres, etc.) in the ESO's workplace; and
- That address how responders are to operate at incidents that are beyond the capability of the ESO.

The SOPs would also establish and implement procedures for:

- Rapid evacuation of responders from dangerous situations, such as rapid growth of fire, impending collapse, impending explosion, incidents of active violence against responders;
- Orderly evacuation of responders;
- A responder accountability system for maintaining accountability of all responders operating at an incident;
- Mayday situations, such as when a responder becomes lost, trapped, injured, ill;
- A Rapid Intervention Team, for the immediate deployment on the scene of a team of responders to search and rescue any missing, disoriented, injured, ill, lost, unaccounted for, or trapped responders;
- Provision of responders with medical monitoring and rehabilitation at emergency incidents, as needed;
- Protecting responders from vehicular traffic while operating at emergency incidents on, or adjacent to, roadways and highways;
- ESO vehicle preparedness and operation;

- Radio communications; and
- Conducting Post Incident Analysis.

n. Incident Management System Development

OSHA believes ESOs need to have a system in place to manage emergency incidents. An incident management system (IMS) can be applied to all sizes and types of emergency incidents. The ESO would be required to adopt or develop in writing and implement an IMS to manage all emergency incidents based on the type and level of service(s) the ESO has established and the pre-incident plans developed.

As background, the IMS is a system that defines the roles and responsibilities to be assumed by responders and the SOPs to be used in the management and direction for emergency incidents and other functions. While the IMS contains SOPs, it is much broader in scope. The IMS covers the overall incident, from beginning to end, whereas the SOPs for emergency incidents would typically provide more specific details.¹

The IMS would provide structure and coordination to the management of emergency incident operations to provide for the safety and health of responders involved.

- The IMS would need to be compatible with the Federal Emergency Management Agency (FEMA)'s "National Incident Management System" (NIMS) and "National Response Framework" (NRF).
- A unified command structure would need to be used on incidents where the complexity requires a shared responsibility among two or more ESOs or agencies.
- The IMS would need to include assurance that the responsibility of addressing the safety of responders operating on the scene is assigned and designated, or an Incident Safety Officer (ISO)² is assigned and designated, to assess the incident scene for existing or potential hazards.
- The IMS must provide a means for responders to notify the Incident Commander (IC) of unsafe conditions or unsafe acts on the incident scene.

The IMS would consist of interactive components that would provide the basis for clear communication and effective operations. Components would include, but not be limited to:

- Common, standard terminology for incident information;

¹ The SOPs for emergency incidents may include details such as directing the first engine to go to front of structure, the second engine to the back, etc.

² The ISO is a responder who is a member of the command staff operating on an incident scene, who is responsible for monitoring and assessing safety hazards and unsafe situations and for developing measures for ensuring personnel safety.

- Modular organization;
- Integrated communications;
- Unified command structure;
- Manageable span of control; and
- Comprehensive resource management.

The IMS would include, but not be limited to, the following functions:

- Command;
- Operations;
- Planning;
- Logistics; and
- Finance/Administration.

An important function of the IMS is command, which would be led by an IC. The IC would be responsible for:

- Front-line management of the incident;
- Tactical planning and execution;
- Determining whether outside assistance is needed; and
- Relaying requests for internal resources or outside assistance through appropriate communications channels.

o. Emergency Incident Operations

OSHA believes that incident management is key to making emergency incident operations as safe as possible. To accomplish this, the ESO would be required to ensure:

- The IMS developed as specified above is utilized at every emergency incident;
- The function of overseeing incident scene safety is addressed by the IC, or an ISO is assigned and designated;
- If an incident escalates in size and complexity, the IC divides the incident into strategic/tactical-level management components;
- A Unified Command (UC) structure is utilized on incidents where the complexity requires a shared responsibility among two or more ESOs or agencies; and
- The IC(s) and responders are rotated or replaced during complex or extended operations.

Each incident needs an IC (or a UC) to be in charge and oversee the entire operation. The ESO would need to ensure:

- One individual responder is assigned as the IC, or the UC structure is utilized if appropriate, to coordinate and direct all activities and establish a command post;
- The IC (or UC) conducts a comprehensive and on-going size-up³ of the incident scene, conducts a life safety risk-benefit analysis based on the size-up, and utilizes the information in the PIP to form an Incident Action Plan; and,
- The IC (or UC) implements a personnel accountability system to account for all responders at the incident scene.

OSHA believes that hazard control zones similar to those used in the Hazardous Waste Operations and Emergency Response rule (HAZWOPR, 29 CFR 1910.120) would improve safety for all ESOs. Hazard control zones would be established at emergency incidents to identify the level of risk to responders and the appropriate protective measures needed. The IC would be required to:

- Designate the zones as no-entry, hot, warm, or cold; mark the zones in a conspicuous manner; and communicate the zones to responders;
- Designate the appropriate level of PPE needed for each zone, and ensure responders properly use the PPE; and
- Limit entry into the hot zone to responders with assigned tasks.

To ensure operations at an incident scene are conducted in a safe manner, the ESO would be required to:

- Identify minimum staffing requirements to ensure incidents are mitigated safely and effectively;
- Ensure operations are limited to those that can be safely performed by the responders available on the scene;
- Ensure at least four responders are assembled before operations are initiated in an Immediately Dangerous to Life or Health (IDLH) atmosphere.⁴ This is based on the requirement in 29 CFR 1910.134, Respiratory Protection; and commonly referred to as “2-in, 2-out”;
- Ensure at least two responders enter the IDLH to operate as a team, and at least two responders are present outside the IDLH to provide assistance to, or rescue of, the entry team;

³ A size-up is an initial and on-going evaluation of the incident scene for the purpose of determining the scope and nature of operational activities to determine mitigation strategies

⁴ IDLH means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual’s ability to escape from a dangerous atmosphere.

- Exception to the requirement for four responders and two-in the IDLH and two-outside the IDLH: In situations where, upon arrival at an emergency scene, the initial responders find an imminent life-threatening situation where immediate action could prevent loss of life or serious injury. In those cases, such action may be taken with fewer than four responders, and without two-in, two-out;
- Ensure responders use positive-pressure Self Contained Breathing Apparatus (SCBA) in the IDLH; and
- Ensure supplied-air respirators are equipped with NIOSH-certified emergency escape air cylinders and pressure-demand face pieces.

Effective communication capability between responders and the IC is essential to the safe mitigation of an incident. The ESO would utilize the radio communication procedures as established in the SOPs above, that use standard protocols and terminology for all types of incidents. Communication equipment would need to allow mutual aid responders to communicate with the Incident Commander and other responders.

To further ensure responder safety on incident scenes, the ESO would be required to implement the following in accordance with the emergency scene related SOPs established above:

- Responder accountability system;
- Rapid Intervention Team;
- Medical and rehabilitation procedures; and
- Scene safety (traffic) procedures.

On some incidents, there may be a need for assistance from employers that are typically considered to be outside the emergency response community but that may be called upon to assist an ESO by providing a service, equipment, or worker. For instance, an ESO may need to remove a heavy object, requiring the use of a crane or other heavy equipment, available through a SSE. To ensure SSWs are prepared to operate safely on an emergency incident in support of the ESO, the ESO would need to ensure:

- Only SSWs designated by the SSE are utilized;
- An initial briefing is provided to each SSW, which includes at a minimum: instruction in the use of appropriate PPE, what hazards are involved, what safety precautions are to be taken, and what duties are to be performed by the SSW;
- An effective means of communication between the IC and the SSW;
- Where appropriate, a responder is designated and escorts the SSW at the emergency incident scene; and
- All other appropriate safety and health precautions provided to ESO responders are used to ensure the safety and health of the SSW.

As noted above, the draft regulatory standard was developed by the NACOSH subcommittee. The subcommittee felt it was appropriate to include provisions for protecting people who are considered as Spontaneous Unaffiliated Volunteers (SUV) and Good Samaritans during emergency incidents. There is no employer/employee relationship between these people and the ESO or the SSE. As such, OSHA cannot require the employer to provide protection for non-employees.

OSHA requests input from SERs about how SUVs and Good Samaritans should be addressed in the standard and how protective measures are currently practiced.

On some incidents, a responder from a non-dispatched ESO or a skilled or unskilled person may voluntarily arrive at an incident scene or disaster site to provide assistance, after the establishment of control/command by the ESO. This person, typically not affiliated with any disaster support group, is considered to be a Spontaneous Unaffiliated Volunteer (SUV). Prior to participation of an SUV, the ESO would need to ensure:

- The incident priorities are assessed and established to determine the need for assistance from SUVs;
- An assembly and registration area for SUVs is established;
- An initial briefing is provided to each SUV, which includes at a minimum: instruction in the use of appropriate PPE, what hazards are involved, what safety precautions are to be taken and what duties are to be performed by the SUV; and
- Each SUV is evaluated based on the SUV's skills and pre-incident training before assigning tasks to the SUV.

On some incidents, a Good Samaritan may be providing service or assistance on the scene prior to the arrival of the ESO. If the ESO permits the Good Samaritan to continue to provide the service or assistance, the ESO would need to ensure the individual's safety to the extent feasible, or direct them to leave the area.

p. Post-Incident Analysis

It is important for ESOs to analyze their response to significant events after they occur. A Post-Incident Analysis (PIA) would be required following events such as a large-scale incident, a near miss incident, a responder or SSW fatality or injury or illness that requires off-scene treatment.

Based on the lessons learned as a result of the PIA, the ESO would identify and implement recommended changes to the PIP, Incident Action Plans and/or SOPs.

q. Program Evaluation

ESOs need to regularly (at least annually) evaluate the adequacy and effectiveness of the Emergency Response program. The review would include determining whether the Emergency Response program was implemented as designed; whether the Emergency Response program is making progress towards meeting its goals; and whether modifications are necessary to correct deficiencies.

Based on the review of the program, the ESO would identify and implement the recommended changes and include timelines for correcting deficiencies.

The following paragraphs apply to employers that are, by definition, Skilled Support Employers.

Not every employer will be an SSE; in fact, most will not be. Also, not every employee of an SSE will be an SSW. The SSE would need to determine which of their workers, based on the workers' knowledge, skills and abilities, could be sent to provide skilled support assistance at an emergency incident scene. The SSE would designate each of those workers to be an SSW.

As noted above, OSHA recognizes the importance of protecting SSWs when they are providing assistance or a service at an emergency incident scene under the control of an ESO.

r. Skilled Support Employer General Requirements

The SSE would be required to establish the type and level of emergency service(s) it expects to perform. The SSE would need to obtain information from the ESO about the protective equipment and other types of protective measures or strategies needed for SSWs. Only workers who are properly trained, qualified, and fit, based on the requirements herein, would be designated to perform as SSWs at an emergency incident.

OSHA believes it is important for SSWs to be physically and mentally fit to perform the expected essential functions of the job. The SSE would be required to establish the minimum fitness for duty requirements for SSWs, based on the type and level of service being provided. The SSE would medically screen each SSW and have the screening evaluated by a qualified health care professional annually. The screening would verify that the SSW:

- Is physically able to safely perform anticipated required activities without requiring direct assistance of another individual;
- Does not have any medical condition (physical or psychological) that prevents him or her from performing the essential job functions assigned to the SSW by the SSE, during an anticipated emergency situation, or that poses a direct or imminent threat to the safety of the SSW or others, places the SSW at an increased risk of adverse health effects, or prohibits the wearing of appropriate PPE during an anticipated emergency situation; and

- Is capable of receiving essential and requisite immunizations, prophylaxis, treatments, pharmaceuticals, and other interventions that are necessary to safeguard health and allow assigned duties to be successfully completed.

It is important for SSEs to review their medical requirements annually and ensure all SSWs meet the requirements.

OSHA recognizes that SSWs can become fatigued while operating at emergency incident scenes. It is important for SSEs to have and implement a fatigue management plan. The plan would include at least the following:

- A fatigue risk management policy that identifies the roles and responsibilities of personnel under the plan;
- An education and awareness training program that includes the identification of fatigue risk factors associated with the emergency operations being performed, and recognition of the effects of fatigue;
- Implementation of control/mitigation strategies that manage SSW fatigue, such as work/rest strategies with shift lengths and rotations, psychological first aid, and time off periods; and
- Assessment of the effectiveness of the controls in mitigating SSW fatigue that include evaluations and monitoring to enable quick course corrections.

The SSE would need to coordinate with the IC and communicate the fatigue management plan, and implement the plan when appropriate—for example, during a long duration incident response. The SSE would also need a system for monitoring and reporting SSW fatigue, and for investigation when an illness or injury may be due to fatigue.

In order to prevent the spread of disease and contaminants, the SSE would, in coordination with the ESO, develop procedures for decontamination. Decontamination procedures would need to be developed, communicated to SSWs and implemented before SSWs or equipment could enter an area where there is the potential for exposure to hazardous substances.

s. Skilled Support – Personal Protective Equipment

It is essential for workers to use PPE when appropriate. In the draft standard, the term PPE includes protective clothing, protective elements and equipment, and respiratory protective equipment.

The SSE would be required to conduct a PPE assessment to determine what is needed to protect SSWs, based on the type and level of service being provided. PPE would need to meet the requirements of the corresponding OSHA standard. The SSE would be required to ensure that

SSWs properly use or wear PPE. The SSE would also be required to provide for cleaning, care, and maintenance of PPE. The SSE would provide PPE at no cost to the SSWs.

t. Skilled Support - Training

SSEs who agree to have their workers act as SSWs must provide appropriate training in anticipation of their SSW working at an emergency scene. The SSE would be required to provide pre-incident training covering the following topics:

- Disaster/emergency site safety and health hazard recognition (including fatigue, heat and cold stress, struck-by and motor vehicle accidents, and confined space awareness);
- Care and proper use of PPE and procedures to safely work on a disaster site, including limitations of respirators;
- Decontamination procedures; and
- Basic principles of the incident command system.

The pre-incident training would be a minimum of seven and a half (7.5) hours, similar to the OSHA Outreach Disaster Site Worker programs. The requirement to provide this training would not be waived because of the emergency nature of an incident.

u. Skilled Support Worker Participation

It is important for SSWs to participate in development of the SSE's Emergency Response program. The SSE would be required to:

- Consult with SSWs in developing and updating the Emergency Response program;
- Involve SSWs in implementing and evaluating the program, and in the review and change process;
- Request input from SSWs regarding workplace modifications;
- Involve SSWs in SSE facility inspections and incident investigations;
- Encourage SSWs to report safety and health concerns, such as hazards, injuries, illnesses, near misses, and deficiencies in the program;
- Respond to such reports in a reasonable period of time; and
- Post procedures in a conspicuous location for reporting safety and health concerns.

Under this draft standard SSEs would be prohibited from retaliating or discriminating against SSWs for, or otherwise engaging in practices or implementing policies that deter SSWs from, participating in the program, including reporting safety and health concerns.

v. Skilled Support Program Evaluation

SSEs would need to regularly (at least annually) evaluate the adequacy and effectiveness of the Emergency Response program. The review would include determining whether the Emergency Response program was implemented as designed; whether the Emergency Response program is making progress towards meeting its goals; and whether modifications are necessary to correct deficiencies.

Based on the review of the program, the SSE would identify and implement the recommended changes and include timelines for correcting deficiencies.

III. Reasons Why Regulation is Being Considered

Emergency response workers in America face considerable occupational health and safety hazards in dynamic and often unpredictable work environments. Current OSHA emergency response and preparedness standards are outdated and incomplete. The standards do not address the full range of hazards facing emergency responders, lag behind changes in protective equipment performance and industry practices, and conflict with current industry consensus standards.⁵ OSHA's current fire brigade standard, 29 CFR 1910.156, was promulgated in 1980 and has only had minor revisions since then.

The draft standard would more closely align OSHA's requirements for emergency responders with the best practices established by FEMA. The NRF, developed by FEMA, presents guiding principles for emergency responders and others to prepare for and provide a unified response to emergency incidents and disasters. A companion to the NRF is FEMA's NIMS. While NIMS provides a template for the management of incidents regardless of size, scope or cause, the NRF provides structure and mechanisms for incident response policy at the national level.

Every day, the duties of an emergency responder may require making life and death decisions. A typical work day of an emergency responder could range anywhere from responding to a mild medical emergency to a more severe incident such as an act of terrorism. In doing their jobs of protecting the public, personal and real property, and the environment, emergency responders risk exposing themselves to safety and health hazards which may lead to injuries, illnesses, and death.

Emergency responders include, but are not limited to, firefighters, emergency medical service providers (such as EMTs, paramedics), technical rescuers (such as swiftwater, collapse, rope/high angle) and others. Many responders perform overlapping duties with other emergency

⁵ For example, 29 CFR 1910.156 requires firefighter training to be consistent with certain named fire training school programs, which were in place when the rule was first promulgated. The schools have long since abandoned those programs and instead follow the NFPA standards as the basis for current training. Also, 29 CFR 1910.156 permits the use of certain types of SCBA, and SCBA accessories/attachments that are prohibited in the consensus standard.

responder roles. For the purposes of this analysis, OSHA will examine the safety and health hazards emergency responders are exposed to in the performance of their duties.

Occupational Safety and Health Hazards

Some of the most common hazards emergency responders may face include:

- vehicle collisions while traveling to or from emergency incidents;
- falls from heights to lower levels due to structural or building collapses;
- being struck by, caught in between, or crushed by falling objects and debris;
- burns and other injuries from flashovers and backdrafts;
- exposure to extreme temperatures, both hot and cold;
- excessive noise exposure;
- exposure to carbon monoxide and other toxic chemicals;
- oxygen depletion and inadequate fresh air to breathe; and
- over-exertion due to lifting heavy objects, wearing protective equipment, repetitive motion, and other similar activities.

Long-term exposure to the various hazards found at emergency incidents may not only lead to physical ailments among responders, but potentially to mental health issues as well. Some longer-term health hazards that may potentially be associated with the duties of emergency responders include:

- exposure to bloodborne diseases;
- cardiovascular diseases due to environmental stressors and exposures;
- cancer due to exposure to asbestos, carcinogens and other chemicals; and
- stress and depression resulting from exposure to traumatic events.

OSHA's approach in this PIRFA is based primarily on the expertise behind NFPA consensus standards and the advice of the experts on NACOSH subcommittee. In this section, the agency summarizes some of the various data and studies examining the kinds of hazards facing emergency responders on the job. It should be noted, however, that this is a very preliminary review of the issue. These studies certainly suggest possible significant risk worthy of further study and the attention of the SERs, but do not enable the agency to yet make significant risk findings for all aspects of the rule and thus, OSHA has not conducted a formal risk assessment. There is enough evidence, however, to convene an SBAR panel. This section is not intended to be an exhaustive review of the evidence, nor is it intended to reach any definitive conclusions regarding the risks to emergency responders or how certain provisions of a potential standard may reduce that risk. If the agency were to go forward with a proposed rule, OSHA would provide additional and more refined information in its preamble and the Preliminary Economic Analysis supporting a formal Notice of Proposed Rulemaking.

The CDC runs the National Occupational Mortality Surveillance (NOMS) program that compiles information from death certificates to allow study of occupational mortality trends. Results are reported as a proportionate mortality ratio (PMR) that compares the proportion of deaths among a given worker population from a given cause to the proportion of deaths among the general worker population from that same cause. A PMR greater than 100 indicates that a particular cause accounts for a greater proportion of deaths in the population of interest than is expected based on the proportion of deaths due to this cause in all workers.

Some data from NOMS for causes of death of interest to this analysis are presented below for Firefighters & Fire Prevention Workers in Table III-1 and for EMTs in Table III-2. Tables III-1 and III-2 show only a handful of causes of death – generally those where the PMR was statistically significantly higher than 100 and where the cause of death was clearly different from other reported causes of death (for example, in Table III-1, OSHA only shows malignant neoplasm of the male genital but not malignant neoplasm of the prostate or malignant neoplasm of the urinary system.) Note that data are not reported where there are fewer than five identified deaths. The small number of workers in the occupation Emergency Medical Technicians and Paramedics means that there are only a few causes of death where there were more than five fatalities and where the data were robust enough to conclude that the PMR is significantly different from the expected value. The full data are presented in Tables B-1 and B-2 in an appendix to this document.

Table III-1 Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
for select causes of death, 1999, 2003-2004, 2007-2013

Cause of Death	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
FALLS, LADDERS OR SCAFFOLDING	395	10	p<0.01	190	727
RAILWAY, WATER, AIR, AND SPACE TRANSPORT FATALITIES	249	14	p<0.01	136	418
MESOTHELIOMA (no codes before 1999)	226	35	p<0.01	158	315
MALIGNANT NEOPLASM OF THE MALE GENITAL ORGANS	201	311	p<0.01	179	225
MALIGNANT NEOPLASM OF THE ESOPHAGUS	190	154	p<0.01	161	222
DROWNING	188	23	p<0.01	119	282
MALIGNANT MELANOMA OF THE SKIN	171	85	p<0.01	137	212
INTENTIONAL SELF HARM	169	306	p<0.01	150	189
FIRE IN BUILDING	165	16		94	268
MALIGNANT NEOPLASM OF THE LARYNX	157	34	p<0.05	109	219
LYMPHATIC LEUKEMIA	155	50	p<0.01	115	204
MALIGNANT NEOPLASM OF THE BRAIN	153	116	p<0.01	126	183
MENTAL DISORDERS RELATED TO ALCOHOL ABUSE	153	51	p<0.01	114	201
ALCOHOLISM	152	52	p<0.01	114	200
MOTOR VEHICLE TRAFFIC-DRIVER	151	74	p<0.01	119	190
CARDIOMYOPATHY	130	159	p<0.01	110	151

Source: CDC, 2018a

Table III-2 Proportionate Mortality Ratio for Emergency Medical Technicians & Paramedics
for select causes of death, 1999, 2003-2004, 2007-2013

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
WATER, AIR AND SPACE TRANSPORT	390	6	p<0.01	143	848
RHEUMATIC HEART DISEASE & FEVER	315	5	p<0.05	102	736
MALIGNANT NEOPLASM OF THE KIDNEY	208	19	p<0.01	125	324
OTHER INJURY UNDETERMINED INTENT	194	18	p<0.05	115	306
MALIGNANT MELANOMA OF SKIN	193	15	p<0.05	108	318
INJURY OF UNDETERMINED INTENT	191	18	p<0.05	113	302
MALIGNANT NEOPLASM OF THE URINARY ORGANS	176	27	p<0.01	116	255
OTHER DISEASES OF DIGESTIVE SYSTEM	142	39	p<0.05	101	194
ACCIDENTAL POISONING	135	88	p<0.01	109	167

Source: CDC. 2018a

Fatal Occupational Injuries and Illnesses Among Firefighters

To develop an estimate of the number of fatal occupational injuries and illnesses resulting from the safety and health hazards associated with the duties of emergency responders, OSHA examined data from a number of sources. For firefighters, the agency evaluated data from the CDC and OSHA’s Integrated Management Information System (IMIS).

Table III-3 shows a total of 845 firefighter in the line of duty fatalities in the U.S. reported by the CDC from 2009 to 2017. More than 50 percent (445) of those fatalities occurred in OSHA state plan states for which municipal emergency responders would fall under OSHA’s jurisdiction. Among a population of about 1 million firefighters, the 845 reported fatalities over a 9-year period equals an average of 94 firefighter fatalities per year, 49 of those occurring annually in OSHA state plan states.

Table III-3.

Number of Firefighter Fatalities in the U.S. vs OSHA State Plan States		
Year	U.S.	State Plan States
2009	97	44
2010	90	50
2011	88	43
2012	87	46
2013	109	57
2014	99	54
2015	91	49
2016	93	53
2017	91	49
All Years	845	445
SOURCE: Centers for Disease Control and Prevention, USFA/NIOSH Fire Fighter Fatality Map		
NOTE: Totals include all States and both career and volunteer firefighters.		
www.cdc.gov		

Of the 845 firefighter fatalities reported by the CDC, nearly 47 percent of those fatalities were volunteers (See Table III-4). Of the 445 fatalities reported in OSHA state plan states, 43 percent were volunteer firefighters, 29 percent career firefighters, and 26 percent worked in departments that have a combination of both career and volunteer firefighters.

Table III-4.
Number of Firefighter Fatalities in the U.S. vs OSHA State Plan States by Department Type, 2009 - 2017

Department Type	U.S.	State Plan States
Career	259	131
Volunteer	397	193
Combination	174	117
Not Available	15	4
Total	845	445
SOURCE: Centers for Disease Control and Prevention, USFA/NIOSH Fire Fighter Fatality Map		
NOTE: Totals include all States and both career and volunteer firefighters.		
www.cdc.gov		

Table III-5 reports the nature of fatal injuries to firefighters. The nature is the primary physical characteristic of the injury or illness that resulted in the death of the firefighter (e.g. asphyxiation, heart attacks, burns, etc.). The nature of a fatality differs from the cause, as the cause refers to the injury, event, or illness that directly caused the death (e.g. falls, struck by objects, vehicle collisions, etc.). In Table III-5, heart attacks were shown to be the leading nature of all firefighter fatalities reported by the CDC. In some cases, these fatalities occurred off-duty although a fatality need not occur while a worker is on the clock for it to be considered an occupational fatality. The second leading nature was trauma, which is a broad term that includes major physical injuries. Nearly 50 percent of the fatal traumatic accidents shown below were motor vehicle related (which could include collisions between vehicles, and also other types of accidents such as responders being backed over or struck by vehicles). Note the fatalities in the table below have not been evaluated to determine whether this potential standard would have prevented any particular fatality.

Table III-5.

Nature of Firefighter Fatalities in the U.S.										
Nature of Fatal Injury	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Asphyxiation	5	7	5	5	7	8	7	7	2	53
Burns	2	0	7	0	23	2	4	1	2	41
Cerebrovascular Accident (CVA)	9	5	1	5	1	3	6	4	2	36
Crushed	0	3	3	2	3	2	3	2	0	18
Drowning	0	0	0	0	0	0	0	0	0	0
Electrocution	1	0	0	0	1	1	0	0	0	3
Fall	0	0	0	0	0	0	0	0	0	0
Heart Attack	40	51	51	41	38	64	55	42	53	435
Heat Exhaustion	1	0	1	2	0	0	0	1	0	5
Trauma	30	23	15	23	29	15	15	27	28	205
Other	7	1	4	7	6	2	1	5	4	37
Not Available	2	0	1	2	1	2	0	4	0	12
Total	97	90	88	87	109	99	91	93	91	845
SOURCE: Centers for Disease Control and Prevention, USFA/NIOSH Fire Fighter Fatality Map										
NOTE: Totals include all States and both career and volunteer firefighters.										
www.cdc.gov										

To further identify hazards associated with emergency responders, OSHA searched the Fatality and Catastrophe Investigation Summaries of the IMIS and the Occupational Safety and Health Information System (OIS).⁶ These reporting systems are based on self-reports by employers of fatalities and a limited number of injuries.

Searching for all emergency response-related fatalities and injuries and using the keywords of: Fire, Fire Fighter, Firefighter, Fire Truck, Fire Brigade, Paramedic, EMT, Emergency Medical Technician, Emergency Response, and Technical Rescue as the search criteria for each year, 2009 through 2017, a total of 1,035 incident reports were generated by the two databases. OSHA manually reviewed the incident summary of each report to determine which incidents were related to emergency response activities. After eliminating duplicate reports as well as incidents that included the search terms but that did not involve emergency responders or emergency response situations⁷, OSHA identified a total of 174 incidents where responders were killed or injured and where a provision in the draft standard is intended to mitigate the cause of the injuries or fatalities; these incidents resulted in 100 fatalities over the nine year period studied.⁸

Consistent with the data from the CDC and USFA, the IMIS and OIS data showed the most common hazards to firefighters were falls to lower levels, cardiac arrest, heat exhaustion, contact with objects and equipment, asphyxiation due to smoke inhalation or the inhalation of harmful chemicals, burns, and traffic accidents.

In addition to other sources of fatalities, the Firefighter Behavioral Health Alliance collects data on active and retired firefighter and EMS provider fatalities by suicide through a confidential reporting system. The earliest data made available are from 2012 and the database shows that a total of 674 reported firefighters and EMS providers died by suicide in the U.S. between 2012 to 2017.

Non-Fatal Occupational Injuries and Illnesses Among Career Firefighters

⁶ OSHA was transitioning from the IMIS to the OIS system during the time period in question. As of November 2011, only some state plan states were submitting data to IMIS, but all states are now reporting data to the OIS.

⁷ Excluded incidents included incidents that had one of the keywords used in the search but were not incidents that involved emergency responders. For example, the search term “fire” returned an incident where a worker at a health care facility was inspecting a fire extinguisher that discharged and struck him in the head. Another incident occurred at a paper mill where workers were killed in a fire and subsequent explosion in a dust collection system.

⁸ 178 non-fatal injuries were also identified. However, even more so than the total count of fatalities, this represents a significant undercount of total injuries, by definition, as the Fatality-Catastrophe reports would routinely only identify incidents where multiple injuries or a fatality were reported. This is underscored by comparing it Table III-6. The value of analyzing the Fatality-Catastrophe reports lies in the detail provided, to prevent future accidents; it is not intended to provide a complete census of all fatalities and injuries.

To develop an estimate of the number of non-fatal occupational injuries and illnesses to firefighters, OSHA evaluated data from the U.S. Bureau of Labor Statistics – Survey of Occupational Injuries and Illnesses. From 2009 to 2016, there were a total of 1,080 non-fatal lost work time injuries and illnesses to firefighters in private industry; 3,060 among state-employed firefighters; and 104,740 among firefighters employed by local governments (See Table III-6) or an average of about 13,600 annually among about 450,000 career firefighters.⁹ The median days away from work for injuries among firefighters averaged 14 days over this time period compared to an average median days away from work of 9 days for all occupations. On average, less than two percent of lost work time injuries to firefighters resulted in one or two lost workdays compared to about 25 percent for all occupations. Nearly 40 percent of lost work time injuries to firefighters resulted in 21 days or more of lost worktime, slightly higher than the proportion for all occupations of about 36 percent. The leading cause of injuries to firefighters across all sectors was overexertion and bodily reaction¹⁰, followed by falls, slips, and trips and contact with objects. Exposure to harmful substances or environments accounted for approximately 7 percent of non-fatal injuries across the private sector and the local government; yet at the state government level, exposure to harmful substances or environment made up nearly 29 percent of all non-fatal injuries.

Table III-6.

Number of Non-Fatal Fire Fighting Occupational Injuries and Illnesses Involving Days Away from Work by Event or Exposure 2009 -2016			
Event or Exposure	Private Industry	State Government	Local Government
Contact with objects and equipment	130	390	16,470
Falls, slips, trips	320	570	20,170
Overexertion and bodily reaction	370	1,090	47,720
Exposure to harmful substance or environment	50	890	7,600
Transportation incidents	40	0	1,880
Fires and explosions	70	0	2,790
Violence and other injuries by persons or animals	80	40	1,290
Other	20	80	6,820
Total	1,080	3,060	104,740
SOURCE: Bureau of Labor Statistics, U.S. Department of Labor, Survey of Occupational Injuries and Illnesses in cooperation with participating State agencies www.data.bls.gov			
NOTE: Dash indicates data do not meet publication guidelines. Because of rounding and data exclusion of nonclassifiable responses, data may not sum to the totals.			

Fatal Occupational Injuries and Illnesses Among Emergency Medical Service Providers

As discussed in depth later in this document, there are an estimated 841,000 emergency medical responders in the United States. EMS providers (such as EMTs, paramedics) perform a variety of

⁹ Only career firefighter non-fatal injuries are captured in the BLS data. These figures do not include non-fatal injuries to volunteer firefighters.

¹⁰ Bodily reaction refers to cases involving musculoskeletal or internal injury or illness resulting from the assumption of an unnatural position, whether from voluntary movements like climbing or from involuntary motions induced by sudden noise, fright, or efforts to recover from slips or loss of balance (not resulting in falls).

job duties that put them at risk for fatal and nonfatal occupational injuries and illnesses. Their regular duties include lifting patients and equipment, treating patients with infectious illnesses, handling hazardous chemical and body substances, and participating in the emergency transport of patients in ground and air vehicles.

Some of the most common hazards EMS providers face include:

- Air and motor vehicle accidents
- Body motion injuries
- Overexertion
- Sprains and strains
- Assault
- Exposure to a harmful substance or environment

From 2003 through 2007, air and motor vehicle accidents accounted for 76 percent of all fatal injuries to EMS providers. During those years, body motion injuries, sprains and strains, and overexertion accounted for 71 percent of all non-fatal injuries. Exposures to harmful substances or environments accounted for 21 percent of injuries (Reichard et al., 2011). The distribution of injuries by days away from work is similar between EMTs and other workers.

Table III-7, below, shows that there were 100 EMS provider fatalities during the 9-year period from 2009 to 2017 or an average of approximately 11 per year. As indicated in the industry profile section, in contrast to firefighting operations, the large majority of unique EMS personnel (81%) are in private ESOs and would therefore be covered by OSHA.

Table III-7. Number of EMS Fatalities in the U.S.

Year	U.S.
2009	13
2010	10
2011	8
2012	11
2013	11
2014	10
2015	14
2016	11
2017	12
All Years	100

Source: BLS C-FOI Report 2017 Accessed August 2021
 BLS OES Codes: Emergency medical technicians and
 paramedics (29204X);
 Ambulance Drivers and Attendants, Except Emergency
 Medical Technicians (533011)
www.bls.gov

Long-Term Health Effects for Firefighters and Other Emergency Responders

Firefighters, in addition to dealing with more imminent threats, work in environments that may expose them to strenuous physical labor, potentially dangerous events, hazardous atmospheres, and other dangers that may pose long-term health risks. OSHA has preliminarily identified four areas of concern: cancer, non-cancer respiratory illnesses, cardiovascular disease, and mental health problems. A substantial body of evidence indicates extended exposure to carcinogens encountered on the job elevates the risk of cancer for firefighters.¹¹ These findings were summarized in 2007 by the International Agency for Research on Cancer (IARC, 2010). Research also suggests firefighting is associated with non-cancer respiratory effects¹² and negative effects on cardiovascular health and mental well-being.¹³ For brevity and because this is only a very preliminary examination of the issue, at the end of this section the agency is providing a bibliography of many of the studies that evaluate the long-term health effects of firefighting.

¹¹ Major studies indicating a connection include LeMasters (2006) and Ma (2006). A larger bibliography of studies appears in Appendix III-A at the end of this chapter.

¹² See, for example, Banauch (2006) and Aldrich (2013).

¹³ Recently, for example, Kales & Smith (2017) regarding cardiovascular issues and Boffa, et al (2017) regarding mental health issues. A larger bibliography of studies appears in Appendix III-A at the end of this chapter.

While these studies focus on firefighters, when other emergency responders are working at emergency sites, they are exposed to the same or similar hazards that could put them at risk for many of the same outcomes as firefighters.

How the Draft Standard Addresses Emergency Responder Hazards

This draft standard is intended to promote positive impacts on safety and health outcomes of firefighters and other emergency responder personnel. Along with the various programmatic provisions that provide for proper planning and coordination, the following provisions in particular address some of the most salient safety and health issues facing emergency responders: responder medical/fitness requirements, facility and equipment preparedness, responder training and qualifications, and vehicle preparedness and operations.

Cardiovascular Disease and Stress

As indicated in Table III-5, heart attacks are the single greatest cause of fatalities on the job for firefighters; cerebrovascular accidents are closely related cardiovascular problems. The draft standard requires regular medical exams to allow medical professionals to monitor the effects of the intense physical demands that place a strain on the cardiovascular system. In addition, the draft rule emphasizes physical fitness, which can reduce the prevalence or likelihood of developing obesity and sleep apnea, both of which increase a person's risk of cardiovascular issues. As discussed below, the draft standard also seeks to reduce the inhalation of hazardous substances, which can aggravate cardiovascular stress.

Traumatic Injuries, Burns, and Strains/Sprains

A traumatic injury is a sudden physical injury that requires immediate medical attention, e.g., muscle strains and sprains, burns, acute back pain, and injuries to extremities. The responder medical/fitness requirements are designed to help ensure that responders are physically fit and can handle an emergency adeptly to minimize traumatic injuries (for examples, see Michaelides et al., 2011). Kuehl, et al., (2012) examined the relationship between Body Mass Index (BMI) and worker compensation claims and found that the odds of filing a worker's compensation claim due to an injury were three times higher for firefighters with a BMI of >30 compared to firefighters with a normal BMI which suggests that improved physical fitness may help firefighters avoid injury. The community or facility vulnerability and risk assessment requirement aims to identify potential hazards to responders and therefore identify the need for training and equipment for risk reduction or avoidance. The facility and equipment preparedness provisions seek to ensure that responders use appropriate and properly-working PPE that may help protect them from traumatic injuries such as burns and extremity injuries. The draft provision addressing responder training and qualifications would train firefighters for various emergency situations and how to respond to those situations in a manner that minimizes the risk of injury. Pre-incident planning, incident management and standard operating procedures can

help to reduce the risk of injury by identifying anticipated hazards, developing plans to mitigate the hazards, providing clear direction for actions needed in response to the hazards, and for personnel accountability and rapid rescue of missing or trapped responders.

Vehicle Collisions

Firefighters and EMS providers also spend a substantial amount of time in transit to and from emergency scenes, which sometimes results in vehicle collisions. In 2016, there were 15,425 collisions with 19 firefighter fatalities involving fire department emergency vehicles responding to or returning from emergency scenes (Haynes and Molis, 2017). The draft standard includes a provision for Vehicle Preparedness and Operation, which requires various safety practices such as equipment maintenance, operator training, and proper use of vehicle restraints intended to prevent vehicular injuries and fatalities.

Cancer and Non-Cancer Respiratory Diseases

As indicated in Table III.5, acute asphyxiation results in a number of firefighter deaths, but even if the effects of inhaling dangerous substances are not immediately fatal, inhalation of hazardous substances can create adverse long-term health effects including cancer and non-cancer respiratory diseases. The draft standard aims to reduce the risk of both of these. The provisions on facility and equipment preparedness ensure that PPE is working correctly to protect firefighters from exposure to carcinogens during and after an emergency. The responder training and qualifications provision allows firefighters to train for various emergency scenes, how to prepare for them, and how to avoid exposures to hazardous substances (for example, by wearing appropriate PPE until the danger of exposure has passed and by properly decontaminating PPE), including carcinogens. For the long-term health effects, annual medical exams allow a medical professional to monitor a responder's respiratory health and cardiovascular health over time. For cancer surveillance, annual medical exams provide the gateway for further testing, as appropriate.

Mental Health

In addition to some potential mental health problems being detected through regular medical exams, the draft standard requires the development of behavioral health and wellness programs to assist responders who are experiencing mental health-related problems.

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IV. Objective of and Legal Basis for the Draft Standard

The objective of the draft standard is to reduce the number of fatalities and injuries occurring among workers involved in emergency response activities. OSHA and many emergency response experts believe this objective will be furthered by requiring emergency service employers to provide responders with equipment, procedures, training, and information necessary to perform emergency services work safely and to ensure that safe work practices are followed.

The legal basis for a potential draft proposal is the responsibility delegated to the Secretary of Labor by the Occupational Safety and Health (OSH) Act of 1970 (29 U.S.C. § 651 et seq.). The OSH Act was enacted “to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources.” 29 U.S.C. § 651(b). The legal authority for issuing safety and health standards is found in Section 6(b) of the OSH Act (29 U.S.C. § 655).

The OSH Act imposes a number of requirements OSHA must satisfy before adopting a safety standard. Among other things, the standard must be highly protective, materially reduce a

significant risk to workers, be technologically feasible, and be economically feasible. See 58 FR 16612, 16614-16 (Mar. 30, 1993); *Int'l Union, United Auto., Aerospace & Agric. Implement Workers of Am. v. OSHA*, 37 F.3d 665, 668-69 (D.C. Cir 1994). A standard is technologically feasible if the protective measures it requires already exist, can be brought into existence with available technology, or can be created with technology that can reasonably be expected to be developed. *United Steelworkers of Am. v. Marshall*, 647 F.2d 1189, 1272 (D.C. Cir. 1980). In determining economic feasibility, OSHA must consider the cost of compliance on an industry rather than on individual employers. In the preliminary and final economic analyses, OSHA follows the advice of the U.S. Court of Appeals for the D.C. Circuit to “construct a reasonable estimate of compliance costs and demonstrate a reasonable likelihood that these costs will not threaten the existence or competitive structure of an industry.” *Id.*

It is important to note that the PIRFA is only one of several analyses OSHA will conduct in developing a proposed rule. OSHA has not yet prepared a health effects analysis nor conducted a preliminary risk assessment or technological feasibility assessment. Although the PIRFA contains information about potential risks and hazards faced by firefighters and other emergency responders, OSHA is in the process of investigating whether the regulatory provisions in the proposed standard would materially reduce significant risks to workers who respond to emergency incidents or provide skilled support at emergency incidents.

V. Description and Estimate of Affected Small and Other Entities

The draft standard was written to apply to Emergency Service Organizations (ESOs) that offer services such as: firefighting, fire rescue, emergency medical service, technical rescue (rope/high angle, cave, etc.), vehicle/machinery rescue, water rescue/recovery (land/shore based, swiftwater, underwater), and search and rescue (urban, mountain, wilderness). The draft standard also applies to general industry organizations that have an established emergency response team, as well as employers that provide skilled personnel or equipment who support emergency responders during an emergency incident, known as Skilled Support Employers (SSE). The draft standard does *not* cover organizations outside of OSHA’s jurisdiction, organizations solely engaged in law enforcement, or SSEs that engage in only post-incident support activities.

Scope of the Draft Standard

Determining Entity Size

This draft rule is unique among OSHA rules that have been the subject of previous SBREFA panels in that it largely affects an activity that is the purview of state and local governments rather than private entities. Firefighting services are largely part of state and local governments but are occasionally provided by private entities. Ambulance services are more commonly provided by private entities, but not always. Emergency response activities that are undertaken

by response teams based at industrial sites are considered part of the entity that they work for. This section lays out how these various types of entities are defined as small entities by the Small Business Administration.

Under the Regulatory Flexibility Act, small governmental jurisdictions (sometimes referred to as “small governments” in this analysis) are defined as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.” 5 U.S.C. § 601(5). For the purposes of this PIRFA, fire departments and EMS providers that are part of state and local governments are referred to as small entities if the government they are part of meets this definition of a small governmental jurisdiction.

The available data on small governmental jurisdictions does not allow OSHA to identify the number of fire departments or EMS providers that serve these jurisdictions or the number of firefighters and EMS providers employed by small governments. In order to derive these estimates, OSHA estimated the median population served per fire department employee and used that to estimate how many workers a department would need to employ to serve a population greater than 50,000. Part 1 of Firehouse Magazine’s (2018) 2017 National Run Survey presents data from a survey of 259 fire departments’ statistics about population and staffing. OSHA extrapolated from these 259 fire departments to the entire universe of fire departments by calculating the median population served per employee (647) and multiplying that by the number of employees for each individual department in the U.S. Fire Administration’s (USFA, 2020) registry data (used for the Fire Department profile (see section V.B.1)) to determine how many departments serve populations of fewer than 50,000.

There are no comparable data available for publicly controlled emergency medical services, so OSHA calculated the ratio of the number of fire departments serving various population sizes to the total number of fire departments and applied this ratio to the total number of emergency medical service providers. This provides an estimate of the number of government-controlled EMS providers serving populations of each size.

Private entities are defined as small pursuant to the SBA’s regulations at 13 CFR 121.201, which include different definitions for each NAICS industry. For private fire departments, the USFA (2020) registry data does not include the NAICS code of each department, and these entities represent a number of industries, each with a unique SBA definition.¹⁴ Most private firefighting entities are in NAICS 56100 Administrative and Support Services, but industrial fire brigades can be found across a wide variety of manufacturing, oil and gas, petrochemical, and other industries and each 6-digit NAICS industry can have a different definition of a small entity. As a

¹⁴ Some information on the NAICS distribution of private firefighting services is available from the BLS employment data, but these are not at the 6-digit NAICS level needed to determine small entity status using the SBA definitions.

simplifying assumption, OSHA used an employment size class definition of 500 employees or fewer to classify private fire departments as small. This likely, on balance, provides an overestimate of the number of affected small entities. While some SBA employee-based size class definitions range up to 1,250 employees, many of the affected private sector entities (e.g., in NAICS 56100) use revenue definitions of “small” which approximate to 100 or fewer employees.

For private emergency medical services (NAICS 621910 Ambulance Services), the SBA definition of a small entity is one with annual revenues of \$15 million or less. In order to use this definition in conjunction with the U.S. Census data used to profile this industry, OSHA converted the revenue data to an employment size class-based definition.¹⁵ The result is that entities with fewer than 500 employees are determined to meet the SBA definition of a small entity.

This PIRFA examines costs by entity employment size class. This includes the six employment size classes used to estimate unit costs for entities of various sizes (fewer than 25, 25-49, 50-99, 100-249, 250-499, and more than 500 employees), as well as the “very small” designation (fewer than 20 employees). For public entities where small entity status is based on the population served, an ESO with 20 employees would equate to a population served of approximately 13,000 people (using the median population served per employee from the Firehouse Magazine (2018) survey data (647)).

For fire departments, the USFA (2020) registry data used for the profile provides an estimate of the number of employees of various types at each department, and departments are allotted to employment size classes using the total number of employees. For emergency medical services, OSHA allotted the National Association of Emergency Medical Technicians (NAEMT, 2014) data on the total number of responders and ESOs into employment size classes using the distribution in the U.S. Census Bureau’s (2015) Statistics of U.S. Businesses data for NAICS 621910 Ambulance Services for 2012, which include data on the number of entities and employees by detailed size class.

Entities not Included in the Analysis

This analysis is limited to ESOs and responders under OSHA’s jurisdiction, so a number of ESOs and responders are excluded from the analysis. Only public ESOs that are in state plan

¹⁵ This was done by finding the largest employment size class with revenue less than \$15 million per entity in the U.S. Census Bureau’s (2015) Statistics of U.S. Businesses data for 2012, with revenue adjusted to 2017\$ using the Bureau of Economic Analysis (BEA, 2018) implicit price deflators for gross domestic product.

states are under OSHA’s jurisdiction and therefore this analysis *excludes* public ESOs and responders in non-state plan states. The following states and territories¹⁶ have state plans:

Alaska	Maine	Oregon
Arizona	Maryland	South Carolina
California	Michigan	Tennessee
Connecticut	Minnesota	Utah
Hawaii	Nevada	Vermont
Illinois	New Jersey	Virginia
Indiana	New Mexico	Washington
Iowa	New York	Wyoming
Kentucky	North Carolina	Puerto Rico

Another unusual aspect of the draft standard is that many emergency responders are unpaid volunteers rather than paid employees. Some state plans cover volunteers and some do not. This analysis does not include volunteer responders in state plan states where volunteers are not covered by the state plan. State plan states do not define “employee” in a standard way, so defining which employees are covered by these regulations is not straightforward, and OSHA has not performed a full legal analysis of these intricacies. For example, some state plans may extend OSHA protections to volunteer firefighters, but not to volunteer EMS providers or other non-firefighting volunteers, while other state plans extend OSHA protections to all volunteers or to no volunteers. To capture the possible effect of these laws, OSHA has designated the following states as OSHA state plan states that *do not* consider volunteers to be employees and therefore do not extend OSHA protections to volunteers. As a result, volunteers in these states are *not* included in this analysis (although public employee firefighters and EMS providers are included):

¹⁶ The U.S. Virgin Islands are an OSHA state plan territory but the USFA registry identified no fire departments in the U.S. Virgin Islands, so they are not included on this list.

Connecticut	New Mexico	Vermont
Kentucky	North Carolina	Virginia
Maryland	Tennessee	Wyoming

Table V-1 shows the number and percentage of volunteer fire ESOs and responders in state plan states where volunteers are and are not covered. The covered ESOs in state plan states include all those with volunteers that also have career or paid-per-call responders. ESOs in state plan states that do not cover volunteers and where a fire department is entirely staffed by volunteer responders are not covered. An average of 66.7 percent of ESOs and 69.7 percent of responders are covered overall, although the percentage varies by employment size class. Because detailed data on the volunteer characteristics of ambulance ESOs and responders are not available, the percentages derived in Table V-1 are also used to estimate the shares of covered EMS ESOs and responders. These estimates are incorporated in the EMT in-scope statistics shown below.

Table V-1. Volunteer Fire ESOs & Responders in State Plan States that Cover and Do Not Cover Volunteers

Type of State Plan	Number		ESOs	Responders
	ESOs	Responders		
Volunteers Covered				
<25	2,435	41,687	66.3%	66.4%
25-49	2,052	66,640	64.0%	64.2%
50-99	569	35,990	75.9%	75.7%
100-249	164	22,486	82.8%	83.0%
250-499	15	4,618	88.2%	88.2%
500+	2	1,258	100.0%	100.0%
Subtotal	5,237	172,679	66.7%	69.7%
Volunteers not Covered				
<25	1,236	21,124	33.7%	33.6%
25-49	1,156	37,154	36.0%	35.8%
50-99	181	11,572	24.1%	24.3%
100-249	34	4,593	17.2%	17.0%
250-499	2	620	11.8%	11.8%
500+	0	0	0.0%	0.0%
Subtotal	2,609	75,063	33.3%	30.3%
Total				
<25	3,671	62,811	100.0%	100.0%
25-49	3,208	103,794	100.0%	100.0%
50-99	750	47,562	100.0%	100.0%
100-249	198	27,079	100.0%	100.0%
250-499	17	5,238	100.0%	100.0%
500+	2	1,258	100.0%	100.0%
Total	7,846	247,742	100.0%	100.0%

Source: OSHA derived from USFA (2020).

Note: Figures may not add to totals due to rounding.

The USFA data in Table V-1 does not include federal entities. (Note, however, that Appendix A, which includes data on all fire departments whether or not they are included in the analysis, *does* include federal entities.)¹⁷

Fire Departments

In this section OSHA presents a preliminary profile of the firefighting industry, primarily focusing on the portion of the industry most likely to be affected by the standard: state and local ESOs in state plan states.

¹⁷ In addition, this analysis mirrors the 2020 USFA Registry Summary in excluding fire departments with incomplete data. Footnote 3 of the Summary states: “There were 102 fire departments that did not provide the number of active firefighting personnel. These departments were excluded from this analysis.”

USFA Registry Data

The data used for the fire department profile are primarily drawn from the USFA (2020) registry data. The USFA registry data indicate that in 2020 there were 27,205 fire departments; 51,549 fire stations; and approximately 1,233,756 firefighting and non-firefighting individuals employed by fire departments in the United States.¹⁸ The registry data also include the fire department's organization type (e.g., private, state, local, etc.), department type (i.e., career, volunteer, mostly career, mostly volunteer), and firefighter type (e.g., active career, paid per call, active volunteer, etc.). "Mostly career" and "mostly volunteer" departments are those where there is a mix of responders who are career or volunteer firefighters, respectively, and are considered to be "combination" departments.

Table V-2 provides an overview of the number of departments in the USFA (2020) registry data, by type of department based on firefighter type. This estimate includes all departments, whether or not they would be covered by the draft standard. Table V-2 shows that the majority of departments (approximately 62 percent) are volunteer departments.¹⁹

Table V-2. Summary Statistics by Fire Department Type for All Fire Departments

ESO Type	Number	Percentage
Career	6,643	24%
Volunteer	16,752	62%
Combination	3,810	14%
Total Fire Departments	27,205	100%

Source: OSHA derived from USFA (2020).

Notes: ESOs are designated as career if they employ 100 percent career and/or paid per call firefighters, and volunteer if they employ 100 percent volunteer firefighters. Figures may not add to totals due to rounding.

The USFA data also enumerate responders by type at each department in the registry, and characterizes whether they are career, volunteer, "paid per call" (i.e., firefighters employed on a per-incident basis), or non-firefighting employees and volunteers. (This estimate includes all firefighters and non-firefighters, whether or not they would be covered by the draft standard.)

Table V-3 summarizes these data, which show that a plurality of responders are volunteer

¹⁸ These statistics are based on the USFA registry database as of January 13, 2020. Registry data are voluntarily reported by fire departments.

¹⁹ The fire registry data are self-reported by individual fire departments, and in some cases, departments have classified themselves as a "volunteer" department even though they also reported some career or paid-per-call responders. OSHA has reclassified these departments such that only those departments where all active firefighters are volunteers are listed as "volunteer" departments and only those where all active firefighters are either career or paid per call are "career," with the remainder being "combination."

firefighters (approximately 48 percent), with career firefighters (approximately 29 percent) being the next most common type and paid-per-call firefighters constituting 11 percent of responders.²⁰

Table V-3. Summary Statistics by Firefighter Type for All Fire Departments

Firefighter Type	Number	Percentage
Active Firefighters – Career	355,107	29%
Active Firefighters – Volunteer	590,016	48%
Active Firefighters - Paid per Call	131,414	11%
Non-Firefighting Personnel	157,219	13%
Total Firefighters	1,233,756	100%

Source: OSHA derived from USFA (2020).

Note: Figures may not add to totals due to rounding.

Table V-4 shows the interplay between department type and firefighter type. (This includes all departments and firefighters, whether or not they would be covered by the draft standard.) As noted above, the numbers below have been adjusted so that the “volunteer” department type includes data for those departments comprised of only volunteer firefighters.

Table V-4. Summary Statistics by Department and Firefighter Type

ESO Type	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Personnel
Career	19,137	283,564	0	113,732	34,093
Volunteer	21,894	0	460,498	0	88,735
Combination	10,518	71,543	129,518	17,682	34,391
Total	51,549	355,107	590,016	131,414	157,219

Source: OSHA derived from USFA (2020).

Notes: ESOs are designated as career if they employ 100 percent career and/or paid per call firefighters, and volunteer if they employ 100 percent volunteer firefighters. Figures may not add to totals due to rounding.

As shown in Table V-5, the vast majority of fire departments (approximately 96 percent) are owned by local governments. When other public non-federal ESOs (state governments, transportation authority/airport fire departments, and “other” departments) are included, public fire departments account for over 98 percent of fire departments.

²⁰ These data also report a total of 157,219 non-firefighting personnel who are not subject to any provisions of this draft standard.

Table V-5. Fire Departments and Firefighters in Scope by Department Type and Employment Size Class

Organization Type	ESOs		Responders	
	Number	Percent	Number	Percent
Local (includes career, combination, and volunteer)	26,024	95.7%	1,021,176	94.9%
State Government	191	0.7%	15,918	1.5%
Transportation Authority or Airport Fire Department	79	0.3%	1,844	0.2%
Other	226	0.8%	7,986	0.7%
Federal Government (Department of Defense)	188	0.7%	10,195	0.9%
Federal Government (Executive Branch)	63	0.2%	3,979	0.4%
Contract Fire Department	257	0.9%	9,305	0.9%
Private or Industrial Fire Brigade	177	0.7%	6,134	0.6%
Non-Federal Public (Local, State, Transportation Authority/Airport, and Other)	26,520	97.5%	1,046,924	97.2%
Private (Contract, Private or Industrial Fire Brigade)	434	1.6%	15,439	1.4%
Total	27,205	100.0%	1,076,537	100.0%

Source: OSHA derived from USFA (2020).

Note: Figures may not add to totals due to rounding.

Profile of Affected Fire Departments

Not all of the fire departments and firefighters included in Table V-2 through Table V-5 would be covered by the draft standard. OSHA does not estimate costs or impacts for federal ESOs, ESOs that do not report having any firefighters, and the non-firefighting personnel included in the USFA (2020) registry data. Further, the analysis excludes public ESOs in non-state plan states, volunteers in state plan states where volunteers are not included in the state plan, and all-volunteer ESOs in state plan states that do not cover volunteers. OSHA thus limits the fire department profile to include private fire departments, public ESOs in state plan states that do not cover volunteers except for fire departments in those states that are 100 percent volunteers, and all public ESOs in state plan states that cover volunteers. In addition to *removing* some ESOs and responders that are not covered, OSHA adjusted the number of private firefighting ESOs and responders to account for underreporting to the registry. After these adjustments, OSHA estimates that there are a total of 11,587 ESOs and 524,489 responders (see Table V-6 that would be affected by this draft rule.

To estimate how the draft standard would affect departments of different sizes, OSHA breaks the USFA registry data, which provides the number of firefighters at each department, into department size ranges, estimating the number of departments, by department type, with fewer than 25 firefighters, 25-49 firefighters, 50-99 firefighters, 100-249 firefighters, 250-499 firefighters, and 500 or more firefighters.

Table V-6 shows the number of firefighters, by ESO type, in each size category of firefighting entities within the scope of the draft standard.

Table V-6. Fire Departments and Firefighters in Scope by Department Type and Employment Size Class

ESO Type/Size Class	ESOs	% ESOs	Responders	% Responders
Career				
<25	1,243	10.7%	22,028	4.2%
25-49	1,541	13.3%	51,030	9.7%
50-99	577	5.0%	38,532	7.3%
100-249	221	1.9%	32,225	6.1%
250-499	51	0.4%	17,876	3.4%
500+	36	0.3%	52,960	10.1%
Total	3,669	31.7%	214,651	40.9%
Volunteer				
<25	2,667	23.0%	45,513	8.7%
25-49	2,296	19.8%	74,846	14.3%
50-99	595	5.1%	37,598	7.2%
100-249	172	1.5%	23,432	4.5%
250-499	15	0.1%	4,618	0.9%
500+	2	0.0%	1,258	0.2%
Total	5,747	49.6%	187,265	35.7%
Combination				
<25	386	3.3%	5,509	1.1%
25-49	1,042	9.0%	28,488	5.4%
50-99	514	4.4%	29,645	5.7%
100-249	174	1.5%	22,054	4.2%
250-499	34	0.3%	10,845	2.1%
500+	21	0.2%	26,033	5.0%
Total	2,171	18.7%	122,573	23.4%
Total				
<25	4,296	37.1%	73,050	13.9%
25-49	4,879	42.1%	154,364	29.4%
50-99	1,686	14.6%	105,775	20.2%
100-249	567	4.9%	77,711	14.8%
250-499	100	0.9%	33,339	6.4%
500+	59	0.5%	80,251	15.3%
Total	11,587	100.0%	524,489	100.0%

Source: OSHA derived from USFA (2020).

Note: Excludes federal ESOs, public ESOs in non-State Plan states, volunteer ESOs in State Plan states where volunteers are not covered, and ESOs with zero responders. Private fire department ESOs and responders are also doubled to account for underreporting.

In addition to the USFA (2020) registry data, OSHA examined Bureau of Labor Statistics (BLS, 2019) Occupational Employment Statistics data for May 2018 to provide more context about private sector firefighters. BLS (2019) data suggest there are approximately 15,700 firefighters employed in the private sector (see Table V-7), similar to the approximately 15,400 firefighters at private fire departments reported in the USFA (2020) registry data (see Table V-6 above). BLS data likely exclude firefighters who are trained to respond to emergency situations but who are primarily employed in another occupation. These responders would be affected by this rule

and OSHA has accounted for the absence of these workers in the data by increasing the number of estimated private sector firefighters. As a preliminary adjustment to deal with this issue as well as underreporting by the fire registry, OSHA’s judgment is that the estimated number of private fire departments and affected firefighters would be approximately twice what appears in the available data. OSHA welcomes comment and input on this aspect of the analysis.

As shown in Table V-7, the majority of firefighters in this dataset (86.0 percent) are employed in NAICS 561000 Administrative and Support Services, providing firefighting services as a commercial activity. The remainder (approximately 14.0 percent) includes industrial fire brigades, fire departments at universities, and the like.

Table V-7. Private Fire Department Employment by NAICS

NAICS	Industry	Employment in SOC 33-2011 Firefighters	Percentage
488100	Support Activities for Air Transportation	290	1.8%
541330	Engineering Services	60	0.4%
541600	Management, Scientific, and Technical Consulting Services	100	0.6%
541710	Research and Development in the Physical, Engineering, and Life Sciences	160	1.0%
561000	Administrative and Support Services	13,490	86.0%
562900	Remediation and Other Waste Management Services	50	0.3%
611000	Educational Services	190	1.2%
621000	Ambulatory Health Care Services	360	2.3%
622100	General Medical and Surgical Hospitals	40	0.3%
711000	Performing Arts, Spectator Sports, and Related Industries	240	1.5%
31-33	Manufacturing	700	4.5%
Total		15,680	100.0%

Source: OSHA derived from BLS (2019).

Note: Figures may not add to totals due to rounding.

Wildland Firefighting Services

In addition to fire departments, a number of private sector ESOs provide less common types of firefighting services, primarily to states and Federal agencies. These services typically support wildland fire suppression and include direct firefighting as well as support services. The numbers of such ESOs and the associated personnel are unknown. But the National Wildfire Suppression Association states that it represents over 200 private wildland fire services contractors with 10,000 employees who operate on an as-needed basis to provide federal, state and local agencies with a variety of resources for wildland fire and other emergency incidents (such as hurricanes and other disasters) (NWSA, 2018).

These private sector ESOs are classed under NAICS 115310 Support Activities for Forestry, which:

comprises establishments primarily engaged in performing particular support activities related to timber production, wood technology, forestry economics and marketing, and forest protection. These establishments may provide support activities for forestry, such as estimating timber, forest firefighting, forest pest control, treating burned forests from the air for reforestation or on an emergency basis, and consulting on wood attributes and reforestation. (U.S. Census Bureau, 2017).

The U.S. Census Bureau's (2015) Statistics of U.S. Businesses data for 2012 estimates a total of 1,604 firms and 10,672 employees in NAICS 115310, although-given the wide variety of activities that comprise this NAICS industry-many of these firms and employees are likely engaged in non-firefighting activities. BLS (2019) Occupational Employment Statistics for 2017 do not include NAICS-specific data for this NAICS nor does the Census Bureau's Economic Census.

Because of the uncertainty around the number of ESOs and responders in this sector, these types of ESOs are not separately accounted for in the cost analysis that follows (but the doubling of private sector fire ESOs and responders likely helps capture some of these entities).

Fire Departments and Responders by Population Served

Because of the preponderance of public entities in emergency response, the population served is of particular relevance. Under the RFA, small governmental jurisdictions are defined as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.” This analysis also examines a number of other population thresholds of less than 50,000 because these are of interest for several regulatory alternatives (see Section VIII). As noted earlier in this section, the population served by each ESO is estimated using the number of firefighters in the USFA (2020) registry data and the ratio of population served to firefighters in Firehouse Magazine's (2018) 2017 National Run Survey. The resulting distribution of ESOs by population served is shown in Table V-8. Table V-8 first presents the total number of ESOs based on the NFPA (2018) registry data, and then presents the number that are estimated to be affected by the draft standard, after making the adjustments noted later in this section (removing public entities in non-state plan states, removing volunteers in state plan states that do not cover volunteers, removing non-firefighting volunteers and civilians, and doubling the number of private ESOs).

Table V-8. Public Fire Departments by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total in NFPA (2018) Registry						
Public – State Plan State						
Career	3,429	15	45	294	2,274	3,000
Volunteer	7,846	57	157	1,297	6,193	7,505
Combination	2,053	1	15	93	1,017	1,719
Subtotal	13,328	73	217	1,684	9,484	12,224
Public – Non-State Plan State						
Career	2,855	8	22	211	1,700	2,453
Volunteer	8,644	46	194	2,341	7,812	8,575
Combination	1,691	1	10	106	1,005	1,523
Subtotal	13,190	55	226	2,658	10,517	12,551
Total						
Career	6,284	23	67	505	3,974	5,453
Volunteer	16,490	103	351	3,638	14,005	16,080
Combination	3,744	2	25	199	2,022	3,242
Total	26,518	128	443	4,342	20,001	24,775
Total in Scope						
Public – State Plan State						
Career	3,429	15	45	294	2,274	3,000
Volunteer	5,237	38	104	860	4,048	4,962
Combination	2,053	1	15	93	1,017	1,719
Subtotal	10,719	54	164	1,247	7,339	9,681
Public – Non-State Plan State						
Career	0	0	0	0	0	0
Volunteer	0	0	0	0	0	0
Combination	0	0	0	0	0	0
Subtotal	0	0	0	0	0	0
Total						
Career	3,429	15	45	294	2,274	3,000
Volunteer	5,237	38	104	860	4,048	4,962
Combination	2,053	1	15	93	1,017	1,719
Total	10,719	54	164	1,247	7,339	9,681

Source: OSHA derived from USFA (2020) and Firehouse Magazine (2018).

Note: Figures may not add to totals due to rounding.

Table V-9 shows the number of responders by estimated population served. As in Table V-8, the first section of Table V-9 shows the total number in the NFPA (2018) registry, and the second section of Table V-9 shows the total in scope.

Table V-9. Public Firefighters by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total in NFPA (2018) Registry						
Public – State Plan State						
Active Firefighters - Career	182,918	25	166	1,349	20,004	51,891
Active Firefighters - Volunteers	329,900	19	658	15,747	156,606	245,418
Active Firefighters - Paid per Call	74,078	4	63	2,317	42,417	62,787
Non-Firefighting Personnel	80,687	349	689	4,826	28,933	47,335
Subtotal	667,583	397	1,576	24,239	247,960	407,431
Public – Non-State Plan State						
Active Firefighters - Career	154,138	15	83	1,283	21,277	52,390
Active Firefighters - Volunteers	250,952	11	940	28,736	177,276	229,531
Active Firefighters - Paid per Call	53,492	3	34	1,735	29,959	48,576
Non-Firefighting Personnel	71,570	222	768	8,740	43,957	59,955
Subtotal	530,120	251	1,825	40,494	272,437	390,420
Total						
Active Firefighters - Career	337,056	40	249	2,632	41,281	104,281
Active Firefighters - Volunteers	580,852	30	1,598	44,483	333,882	474,949
Active Firefighters - Paid per Call	127,570	7	97	4,052	72,376	111,363
Non-Firefighting Personnel	152,257	571	1,457	13,566	72,890	107,290
Total	1,197,703	648	3,401	64,733	520,397	797,851
Total in Scope						
Public – State Plan State						
Active Firefighters - Career	182,918	25	166	1,349	20,004	51,891
Active Firefighters - Volunteers	236,615	13	437	10,451	102,003	164,758
Active Firefighters - Paid per Call	74,078	4	63	2,317	42,417	62,787
Non-Firefighting Personnel	0	0	0	0	0	0
Subtotal	493,611	42	666	14,117	164,424	279,436
Public – Non-State Plan State						
Active Firefighters - Career	0	0	0	0	0	0
Active Firefighters - Volunteers	0	0	0	0	0	0
Active Firefighters - Paid per Call	0	0	0	0	0	0
Non-Firefighting Personnel	0	0	0	0	0	0
Subtotal	0	0	0	0	0	0
Total						
Active Firefighters - Career	182,918	25	166	1,349	20,004	51,891
Active Firefighters - Volunteers	236,615	13	437	10,451	102,003	164,758
Active Firefighters - Paid per Call	74,078	4	63	2,317	42,417	62,787
Non-Firefighting Personnel	0	0	0	0	0	0
Total	493,611	42	666	14,117	164,424	279,436

Source: OSHA derived from USFA (2020) and Firehouse Magazine (2018).

Note: Figures may not add to totals due to rounding.

Emergency Medical Services

The draft standard also covers public and private ESOs that provide emergency medical services. However, detailed data for EMS providers similar to those for fire departments are not available.

OSHA combined data from several sources in order to construct a profile with similar parameters as the firefighter profile.

First, statistics reported by the NAEMT (2014) based on 2008 data suggest an estimated 15,276 ambulance services ESOs in the United States, which NAEMT breaks down into detailed categories (see Table V-10). NAEMT reported that an estimated 49 percent of EMS providers are fire departments with either cross-trained or separate EMS responders. Other “government or third party” providers represent an estimated 15 percent of the total, while private EMS providers account for 18 percent, and hospital-based services represent 7 percent of the total.

The ESOs considered in this section exclude EMS responders that operate as part of a fire department (as these are already included in the fire department profile detailed above) and public ESOs located in non-state plan states. OSHA combined all other types of public EMS ESOs to arrive at an estimated affected population of ambulance service providers. OSHA based the estimate of the percentages of public ESOs that are in state plan and non-state plan states on the ratio of employment in Standard Occupational Classification (SOC) 29-2041 Emergency Medical Technicians and Paramedics in state plan states to employment in all states in BLS (2019) Occupational Employment Statistics (OES) data for May 2018, 54.55 percent.

Table V-10. Ambulance Services by Detailed Type of Provider

	Ambulance ESOs	
	Percentage [d]	Total [d]
Total U.S.		
Fire Department with Cross-Trained EMS Personnel	40%	6,110
Fire Department with Separate EMS Personnel	9%	1,375
Private Company	18%	2,750
Other	8%	1,222
Hospital-Based Service	7%	1,069
Public Utility Model (Private Contractor)	2%	306
Government or Third Party	15%	2,215
Police Department with Cross-Trained EMS Personnel	1%	76
Police Department with Separate EMS Personnel	1%	153
Total Ambulance Services	100%	15,276
Total		
Private [a]	69%	5,347
Public, State Plan State [b] [c]	17%	1,333
Public, Non-State Plan State [b] [c]	14%	1,111
Total Ambulance Services	100%	7,791
Total in Scope		
Private [a]	81%	5,347
Public, State Plan State [b] [c]	19%	1,242
Total Ambulance Services	100%	6,589

Sources: OSHA derived from NAEMT (2014) and BLS (2019).

Notes:

- [a] The "private" category includes private company, other, hospital-based service, and public utility model (private contractor).
- [b] The public category includes "government or third party" and police department ambulance services. This count excludes fire departments, which are profiled elsewhere.
- [c] The portion of public services in state plan states is based on the ratio of employment in SOC 29-2041 'Emergency Medical Technicians and Paramedics' in state plan states to employment in all states in BLS OES data for May 2017 (BLS, 2018), 54.55%.
- [d] Figures may not add to totals due to rounding.

NAEMT (2014) estimates that these ambulance services employ 840,669 responders which includes first responders, emergency medical technicians (EMTs), paramedics, and registered nurses. This analysis assumes that those responders are distributed proportionately among the ambulance services of each type, which yields an estimate of 363,353 responders at in-scope ESOs, with 69,118 of these responders at public ESOs in state plan states and 294,234 responders at private ESOs.

NAEMT (2014) estimates that approximately 38 percent of ambulance service entities are staffed by career responders, 22 percent by volunteers, and 40 percent by both. Unlike the USFA (2020) data used for the firefighter profile, NAEMT does not specify both ambulance service and responder types (e.g., how many career responders are at ESOs that are staffed primarily with volunteers). For the fire departments and firefighters analysis, OSHA was able to identify different types of staffing arrangements for fire departments including where departments were mostly, but not completely, staffed by volunteers and vice versa. Lacking any data to make

similar determinations, this analysis of ambulance ESOs assumes that entities reportedly staffed by career responders are staffed entirely by career responders, entities reported as volunteer services are staffed entirely by volunteers, and services in the “combination” category are staffed by an unknown mix of career and volunteer responders. The estimates of career, volunteer, and “combination” services and responders are shown in Table V-11.

As with fire departments and firefighters, volunteer responders and ESOs where 100 percent of responders are volunteers are excluded in OSHA state plan states where volunteers are not covered by the state plan. Since the NAEMT and BLS data are not granular enough to allow an exact calculation of the percentage of volunteers in state plan states that cover or do not cover volunteers, OSHA is assuming that the percentage of volunteer emergency medical service ESOs and responders located in these states is the same as for firefighters (see Table V-1).

**Table V-11. Estimated Number of Ambulance Services and Personnel
– Career, Volunteer, and Combination**

	Private [a]	Public, State Plan State [b] [c]	Total in Scope [d]
Ambulance ESOs			
Number			
Career	2,032	507	2,538
Volunteer	1,176	202	1,378
Combination	2,139	533	2,672
Total	5,347	1,242	6,589
Percent of Total in Scope			
Career	31%	8%	39%
Volunteer	18%	3%	21%
Combination	32%	8%	41%
Total	81%	19%	100%
Personnel			
Number			
Career	111,809	27,884	139,693
Volunteer	64,732	13,555	78,286
Combination	117,694	29,352	147,046
Total	294,234	70,791	365,025
Percent of Total in Scope			
Career	31%	8%	38%
Volunteer	18%	4%	21%
Combination	32%	8%	40%
Total	81%	19%	100%

Sources: OSHA derived from NAEMT (2014), USFA (2020), and BLS (2019).

Notes:

- [a] The "private" category includes private company, other, hospital-based service, and public utility model (private contractor).
- [b] The public category includes "government or third party" and police department ambulance services. This count excludes fire departments, which are profiled elsewhere.
- [c] The portion of public services in state plan states is based on the ratio of employment in SOC 29-2041 'Emergency Medical Technicians and Paramedics' in state plan states to employment in all states in BLS OES data for May 2017 (BLS, 2018), 54.55%.
- [d] Figures may not add to totals due to rounding.

Finally, OSHA has distributed ambulance ESOs and responders at those ESOs into employment size classes, which parallel the size classes used for fire departments above (fewer than 25 responders, 25 to 49 responders, etc.). This distribution uses data on the number of firms and employees in a variety of detailed employment size classes reported in the U.S. Census Bureau's (2015) 2012 Statistics of U.S. Businesses data for NAICS 621910 Ambulance Services. The number of ambulance services ESOs by type and employment size class are shown in Table V-12.

Table V-12. Estimated Number of in Scope Ambulance ESOs by Employment Size Class

Employment Size Class [a]	Private [b]	Public, State Plan State [c] [d]	Total in Scope [e] [f]
Career			
<25	1,274	318	1,591
25-49	374	93	467
50-99	189	47	236
100-249	105	26	131
250-499	33	8	41
500+	57	14	71
Total	2,032	507	2,538
Volunteer			
<25	737	122	859
25-49	216	34	251
50-99	110	21	130
100-249	61	13	73
250-499	19	4	23
500+	33	8	41
Total	1,176	202	1,378
Combination			
<25	1,341	335	1,675
25-49	394	98	492
50-99	199	50	249
100-249	110	28	138
250-499	35	9	44
500+	60	15	75
Total	2,139	533	2,672
Total			
<25	3,352	774	4,126
25-49	984	226	1,210
50-99	498	117	615
100-249	276	66	342
250-499	87	21	108
500+	150	37	187
Total	5,347	1,242	6,589

Sources: OSHA derived from NAEMT (2014), USFA (2020), BLS (2019), and U.S. Census (2015).

Notes:

- [a] The estimated distribution of ambulance services into employment size classes is based on the distribution of firms in these same employment size classes in U.S. Census Bureau's (2015) Statistics of U.S. Businesses data for 2012 for NAICS 621910 Ambulance Services.
- [b] The "private" category includes private company, other, hospital-based service, and public utility model (private contractor).
- [c] The public category includes "government or third party" and police department ambulance services. This count excludes fire departments, which are profiled elsewhere.
- [d] The portion of public services in state plan states is based on the ratio of employment in SOC 29-2041 'Emergency Medical Technicians and Paramedics' in state plan states to employment in all states in BLS OES data for May 2017 (BLS, 2018), 54.55%.
- [e] ESOs where 100 percent of responders are volunteers are exempt in State Plan states where the State Plan does not cover volunteers.
- [f] Figures may not add to totals due to rounding.

Table V-13 shows the estimated number of responders employed at in-scope ambulance ESOs by size class.

Table V-13. Estimated Number of in Scope Ambulance Responders by ESO Employment Size Class

Employment Size Class [a]	Private [b] [f]	Public, State Plan State [c] [d] [f]	Total in Scope [e] [f]
Career			
<25	14,058	3,506	17,564
25-49	14,749	3,679	18,428
50-99	15,012	3,744	18,756
100-249	17,541	4,374	21,915
250-499	10,944	2,729	13,673
500+	39,504	9,852	49,356
Total	111,809	27,884	139,693
Volunteer			
<25	8,139	1,347	9,486
25-49	8,539	1,367	9,907
50-99	8,691	1,640	10,332
100-249	10,155	2,103	12,258
250-499	6,336	1,393	7,729
500+	22,871	5,704	28,575
Total	64,732	13,555	78,286
Combination			
<25	14,798	3,691	18,489
25-49	15,526	3,872	19,398
50-99	15,803	3,941	19,743
100-249	18,464	4,605	23,069
250-499	11,520	2,873	14,393
500+	41,583	10,371	51,954
Total	117,694	29,352	147,046
Total			
<25	36,995	8,544	45,539
25-49	38,814	8,918	47,732
50-99	39,506	9,325	48,831
100-249	46,161	11,082	57,243
250-499	28,800	6,996	35,795
500+	103,958	25,926	129,885
Total	294,234	70,791	365,025

Sources: OSHA derived from NAEMT (2014), BLS (2019), and U.S. Census (2015).

Notes:

- [a] The estimated distribution of ambulance services into employment size classes is based on the distribution of firms in these same employment size classes in U.S. Census Bureau's (2015) Statistics of U.S. Businesses data for 2012 for NAICS 621910 Ambulance Services.
- [b] The "private" category includes private company, other, hospital-based service, and public utility model (private contractor).
- [c] The public category includes "government or third party" and police department ambulance services. This count excludes fire departments, which are profiled elsewhere.

- [d] The portion of public services in state plan states is based on the ratio of employment in SOC 29-2041 'Emergency Medical Technicians and Paramedics' in state plan states to employment in all states in BLS OES data for May 2017 (BLS, 2018), 54.55%.
- [e] Volunteers are exempt in State Plan states where the State Plan does not cover volunteers.
- [f] Figures may not add to totals due to rounding.

Similar to the approach OSHA used for fire departments, OSHA estimated the number of public ambulance ESOs serving small governmental jurisdictions (those serving fewer than 50,000 people) as well as a number of other population thresholds of less than 50,000, because these are of interest for several regulatory alternatives. As noted in earlier in this section, because no detailed data on the size of the jurisdiction served are available for ambulance ESOs, OSHA applied the ratio of the number of fire departments serving populations of different sizes to the total number of fire departments to ambulance ESOs to estimate this distribution. Table V-14 shows the resulting distribution of ambulance ESOs by estimated population served, first showing all ambulance ESOs, and then showing the number that are in scope (after removing public entities in non-state plan states and removing volunteers in state plan states that do not cover volunteers).

Table V-14. Public Ambulance ESOs by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total						
Public – State Plan State						
Career	507	1	3	32	145	180
Volunteer	293	0	1	11	49	60
Combination	533	1	4	35	161	200
Total	1,333	2	8	77	355	441
Public – Non-State Plan State						
Career	422	1	3	26	121	150
Volunteer	244	0	1	9	41	50
Combination	444	1	3	29	134	166
Total	1,111	2	7	64	295	367
Total						
Career	929	2	6	58	266	331
Volunteer	538	1	2	19	89	111
Combination	978	2	7	64	295	366
Total	2,444	4	15	142	650	808
Total in Scope						
Public – State Plan State						
Career	507	1	3	32	145	180
Volunteer	202	0	1	7	34	42
Combination	533	1	4	35	161	200
Total	1,242	2	8	74	339	422
Public – Non-State Plan State						
Career	0	0	0	0	0	0
Volunteer	0	0	0	0	0	0
Combination	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total						
Career	507	1	3	32	145	180
Volunteer	202	0	1	7	34	42
Combination	533	1	4	35	161	200
Total	1,242	2	8	74	339	422

Sources: OSHA derived from NAEMT (2014), BLS (2019), U.S. Census (2015), USFA (2020) and Firehouse Magazine (2018).

Note: Figures may not add to totals due to rounding.

Table V-15 shows the estimated number of responders employed by ambulance ESOs by population served, including both the total number of responders and the total number of responders in scope once the scope adjustments are made.

Table V-15. Public Ambulance Responders by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total						
Public – State Plan State						
Career	27,884	141	475	4,576	21,016	26,124
Volunteer	16,144	82	275	2,649	12,167	15,124
Combination	29,352	148	500	4,817	22,122	27,498
Total	73,380	371	1,250	12,041	55,306	68,746
Public – Non-State Plan State						
Career	23,228	117	396	3,812	17,507	21,762
Volunteer	13,448	68	229	2,207	10,136	12,599
Combination	24,451	124	417	4,012	18,428	22,907
Total	61,127	309	1,042	10,031	46,071	57,267
Total						
Career	51,113	258	871	8,387	38,523	47,885
Volunteer	29,592	150	504	4,856	22,303	27,723
Combination	53,803	272	917	8,829	40,551	50,405
Total	134,507	680	2,292	22,072	101,376	126,014
Total in Scope						
Public – State Plan State						
Career	27,884	141	475	4,576	21,016	26,124
Volunteer	13,555	68	231	2,224	10,216	12,699
Combination	29,352	148	148	148	148	148
Total	70,791	358	854	6,948	31,380	38,971
Public – Non-State Plan State						
Career	0	0	0	0	0	0
Volunteer	0	0	0	0	0	0
Combination	0	0	0	0	0	0
Total	0	0	0	0	0	0
Total						
Career	27,884	141	475	4,576	21,016	26,124
Volunteer	13,555	68	231	2,224	10,216	12,699
Combination	29,352	148	148	148	148	148
Total	70,791	358	854	6,948	31,380	38,971

Sources: OSHA derived from NAEMT (2014), BLS (2019), U.S. Census (2015), USFA (2020) and Firehouse Magazine (2018).

Note: Figures may not add to totals due to rounding.

Skilled Support Employers

Under OSHA’s draft emergency response standard, a Skilled Support Employer is defined as an entity whose primary function is something other than providing an emergency service, but who designates one or more employees to provide a service at the scene of an emergency incident.

Examples include employers that provide cranes, heavy duty wrecker/rotator tow vehicles, construction equipment, or utility and public health services. While detailed data are available regarding the establishments and employees in industries that might provide these services in general, no information is currently available to characterize or profile the numbers of entities or employees that have arrangements with Emergency Service Organizations to provide such services on an ongoing basis (the unit costs of complying with this draft standard for SSEs are presented later in this PIRFA).

Combined Fire Department and Emergency Medical Service Profile

Table VI-16 summarizes the number of ESOs and responders in the scope of this analysis, drawing from the firefighter profile (Table V-6 above) and emergency medical services profile (Table V-12 and Table V-13 above).

Table V-16 also summarizes the number of ESOs and responders that would be small by either RFA definitions (for public ESOs) or SBA definitions (for private ESOs), and that are considered very small (those with fewer than 20 employees).²¹

²¹ See Section V for a discussion of how entity size was determined.

Table V-16. Combined Fire Department and Emergency Medical Service Profile – Summary

Employment Size Class	Total in Scope				RFA/SBA Small	
	ESOs	Responders	ESOs	Responders	ESOs	Responders
Fire Departments						
<25	4,296	73,050	4,294	72,302	1,897	23,247
25-49	4,879	154,364	4,879	154,364	0	0
50-99	1,686	105,775	1,346	77,960	0	0
100-249	567	77,711	24	3,434	0	0
250-499	100	33,339	2	600	0	0
500+	59	80,251	0	0	0	0
Total	11,587	524,489	10,545	308,660	1,897	23,247
Emergency Medical Services						
<25	4,126	45,539	3,615	13,694	3,592	32,177
25-49	1,210	47,732	1,061	14,324	0	0
50-99	615	48,831	538	14,811	0	0
100-249	342	57,243	298	17,481	0	0
250-499	108	35,795	94	10,983	0	0
500+	187	129,885	12	24,289	0	0
Total	6,589	365,025	5,619	95,581	3,592	32,177
Total						
<25	8,422	118,589	7,909	85,996	5,489	55,424
25-49	6,089	202,096	5,940	168,688	0	0
50-99	2,301	154,606	1,884	92,771	0	0
100-249	909	134,953	322	20,915	0	0
250-499	208	69,134	96	11,583	0	0
500+	246	210,136	12	24,289	0	0
Total	18,176	889,514	16,164	404,241	5,489	55,424

Sources: OSHA derived from USFA (2020), NAEMT (2014), BLS (2019), Firehouse Magazine (2018), and U.S. Census (2015).

Note: Excludes federal ESOs, public ESOs in non-State Plan states, volunteer ESOs in State Plan states where volunteers are not covered, and ESOs with zero responders. Private fire department ESOs and responders are also doubled to account for underreporting.

VI. Summary of Reporting, Recordkeeping, and Other Compliance Requirements

Unit Costs

Wage Estimates Used in the Analysis

Table VI-1 shows the loaded hourly wages used in the analysis. The primary source for wage estimates in this analysis is BLS' cross-industry Occupational Employment Statistics (OES) for May 2018 (BLS, 2019). To the extent possible, OSHA has tried to employ the relevant occupational wage category. As discussed below, for example, OSHA used SOC 33-2011 *Firefighters* to estimate the wage for career firefighters.

Volunteer firefighters and EMS providers, however, do not receive wages for their services, and therefore the career emergency responder wages may not be an accurate characterization of the opportunity cost of their time. Therefore, using career responder wages to estimate the costs to volunteer firefighters and EMS providers and to the departments where they work of complying with the provisions of this draft standard would not be accurate. For these volunteers, OSHA preliminarily judges it more appropriate to use the overall private industry median hourly wage, \$17.67, because volunteers come from a broad spectrum of the workforce; their primary occupational wage is a proxy for the opportunity cost of their time. Given these estimates, OSHA created a weighted average for responders of all types using the number of volunteers and non-volunteer responders who would be covered by the draft standard. For firefighters, the weighted average is calculated with 269,870 career and paid-per-call firefighters making the BLS OES median hourly wage for SOC 33-2011 *Firefighters* (\$23.85) and 254,619 volunteer firefighters making the private industry median hourly wage (\$17.67), for a weighted average base hourly wage of \$20.81. For EMS providers, the weighted average is calculated with 286,739 responders in career and combination (career and volunteer) ESOs making the BLS OES median hourly wage for SOC 29-2041 *Emergency Medical Technicians and Paramedics* (\$16.50) and 78,286 responders in volunteer ESOs making the private industry median hourly wage (\$17.67), for a weighted average base hourly wage of \$16.75. (While the median wage used for volunteers is higher than the BLS OES wage for EMS providers, OSHA uses that median wage for volunteer EMS providers as well as for volunteer firefighters in this analysis to maintain consistency.)

OSHA applies a fringe benefits rate of 31.8 percent to the base wages, drawn from BLS' Employer Costs for Employee Compensation for March 2018 (BLS, 2018) in order to account for the value of fringe benefits provided by the employer. OSHA then calculates total compensation as wages plus benefits. There are also indirect expenses that cannot be tied to producing a specific product or service, called overhead costs. Common examples include rent, utilities, and office equipment. There is no general consensus on the cost elements that fit this definition and the lack of a common definition has led to a wide range of overhead estimates. Consequently, the treatment of overhead costs needs to be case-specific. For SBREFA, OSHA adopted an overhead rate of 17 percent of base wages (EPA, 2002; Rice, 2002). This 17 percent rate is based on an estimate of overhead costs for safety and health professionals in large private organizations. OSHA suspects that overhead rates in ESOs would also tend to be low. This overhead rate is consistent with the overhead rate used for sensitivity analyses in the Final Economic Analysis (FEA) in support of the 2017 final rule delaying the deadline for electronic submission of certain injury and illness data (82 FR 55761) and the FEA in support of OSHA's

2016 final standard on Occupational Exposure to Respirable Crystalline Silica.²² (83 FR at 36501).

To calculate the total per worker hourly labor cost, OSHA added the three components together: base wages + fringe benefits (31.8 percent of base wages) + applicable overhead (17 percent of base wages). This increases the base employee compensation to a fully-loaded hourly wage. OSHA requests comment on whether the application of an overhead rate is appropriate for volunteers.

²² See the sensitivity analyses in the Improved Tracking FEA (<https://www.gpo.gov/fdsys/pkg/FR-2017-11-24/pdf/2017-25392.pdf>, page 55765) and the FEA in support of OSHA's 2016 final standard on Occupational Exposure to Respirable Crystalline Silica (81 FR 16285) (<https://www.gpo.gov/fdsys/pkg/FR-2016-03-25/pdf/2016-04800.pdf> pp.16488-16492.). The methodology was modeled after an approach used by the Environmental Protection Agency. More information on this approach can be found at: U.S. Environmental Protection Agency, "Wage Rates for Economic Analyses of the Toxics Release Inventory Program," June 10, 2002 (Ex. 2066). This analysis itself was based on a survey of several large chemical manufacturing plants: Heiden Associates, *Final Report: A Study of Industry Compliance Costs Under the Final Comprehensive Assessment Information Rule*, Prepared for the Chemical Manufacturers Association, December 14, 1989, Ex. 2065.

Table VI-1. Wages used in the Analysis

Labor Category	SOC	Occupation	Median Hourly Wage [a]	Fringe [b]	Overhead [c]	Loaded Hourly Wage [d]
Private Industry Median	00-0000	All Occupations	\$17.67	31.8%	17.0%	\$28.91
Fire Chief	11-1011	Chief Executive	\$91.15	31.8%	17.0%	\$149.15
Firefighter (OES)	33-2011	Firefighters	\$23.85	31.8%	17.0%	\$39.03
Firefighter (Weighted Average)	00-0000/33-2011	All Occupations/Firefighters	\$20.81	31.8%	17.0%	\$34.05
EMT Supervisor	11-9160	Emergency Management Directors	\$35.78	31.8%	17.0%	\$58.55
EMT/Paramedic (OES)	29-2041	Emergency Medical Technicians and Paramedics	\$16.50	31.8%	17.0%	\$27.00
EMT/Paramedic (Weighted Average)	00-0000/29-2041	All Occupations/Emergency Medical Technicians and Paramedics	\$16.75	31.8%	17.0%	\$27.41
Skilled Support Supervisor	47-1010	First-Line Supervisors of Construction Trades and Extraction Workers	\$31.36	31.8%	17.0%	\$51.31
Skilled Support Worker	47-2000	Construction Trades Workers	\$21.54	31.8%	17.0%	\$35.25

Sources: OSHA derived from BLS (2018), BLS (2019), EPA (2002) and Rice (2002).

Notes:

- [a] Median hourly wage rates are drawn from BLS' cross-industry OES for May 2018 (BLS, 2019). For firefighters and EMTs, we use a weighted average of the private industry median and BLS OES wage, weighted by the number of volunteer and non-volunteer responders in scope.
- [b] The fringe rate is drawn from BLS' Employer Costs for Responder Compensation for March 2018 (BLS, 2019).
- [c] The overhead rate is drawn from EPA (2002) and Rice (2002).
- [d] The loaded hourly wage is derived by dividing the median hourly wage by (1 - the fringe rate) and then multiplying by the 11.59% overhead rate.

Fire Departments

Table VI-2 shows the estimated amount of time needed to comply with a given provision (referred to as the “unit labor burden”) for each requirement in the draft standard for fire departments by Employment Size Class. To estimate the unit cost for establishments in each size class, OSHA first estimated the burden per provision for establishments in the 250-499 employee size class. Using that estimate as the base, OSHA scaled the estimates proportionally for the unit time estimates for establishments in the other size classes. Where an activity is only estimated to take a few minutes, the same estimate is used across ESO sizes since scaling down very small time estimates would result in unreasonably low time estimates for smaller establishments. Table VI-2 also shows whether a unit cost is applied per ESO or per responder, the type of worker expected to undertake a given activity, and whether an activity is estimated to take place one time or annually.

Unless otherwise noted in this section, the time estimates for complying with draft provisions are based on OSHA’s professional expertise, considering what the draft standard requires and estimates of the hours necessary to comply with similar requirements in other OSHA rules. The agency requests feedback from SBREFA participants on all aspects of these cost estimates.

Table VI-2 shows that the costs of this draft standard include a per employee cost to comply with the draft requirement for evaluating fitness for duty. OSHA estimates that this will take, on average, two hours per responder (for all ESO sizes). This time estimate includes a one-hour fitness assessment, with one responder being assessed and another performing the assessment. (This may be an overestimate of the time necessary for the fitness test if groups of responders can be evaluated at the same time.) Note that this does not include any labor time for responders to perform regular physical activities to increase their fitness. The draft standard would provide a framework for facilitating responders to maintain sufficient fitness levels for their responsibilities, including, for example, providing for exercise training. However, the agency believes that the standard would not require an increase in compensation of responders by ESOs. For example, fitness exercises are routine among firefighters during downtime (*see* Poston, et al. (2013), which found that between 80 and 95 percent of firefighters surveyed reported engaging in exercise as least “some days” while at the fire station).

Table VI-2 also shows per employee training and qualification costs. The hours necessary to complete state-required training can vary significantly by state and by type of firefighter (career, volunteer, or paid per call). To broadly capture initial responder training, OSHA averaged the time needed to complete a 110-hour NFPA-approved volunteer firefighter course (VolunteerFD.org, 2018) and the 600 hours a responder would spend training at a State Fire Academy (FireRecruit.com, 2017) in order to derive the average number of training hours. Using this method, OSHA estimates that, in the base-case, a “typical” firefighter would complete 355 hours of initial responder training. This estimate was scaled for the remaining fire department

size classes based on an initial assumption that shorter training courses will be adequate for smaller departments while large departments will need to utilize more extensive training courses for their responders.

Table VI-3 shows the estimated dollar value of unit costs by Employment Size Class for each requirement of the draft standard. For the time requirements shown in Table VI-2, those time estimates are multiplied by the loaded hourly wage for the type of worker that would perform each task (see Table V-1). For the majority of the per ESO unit costs, the draft standard's requirements would be undertaken by a Fire Chief (SOC 11-1011) with a loaded wage rate of \$149.15 per hour (BLS, 2018; BLS, 2019). Costs that are applied on a per employee basis are calculated using the weighted average loaded hourly wage for a firefighter of \$34.12 (derived from BLS (2018) and BLS (2019)).

The unit costs for medical surveillance are drawn from the Centers for Medicare and Medicaid's (CMS, 2018a) Physician's Fee Schedule for 2018, CMS' (2018b) Clinical Laboratory Fee Schedule, the Centers for Disease Control and Prevention (CDC, 2018) Adult Vaccine Price List, Joshi's (2014) estimate of the cost of Hepatitis C screening, and Healthcare Administrative Providers' (HAP, 2016) estimate of the cost of a CT scan to screen for lung cancer. The costs are applied on a per employee basis but -- other than the time needed to complete these medical exams -- do not depend on the wage.

OSHA has preliminarily determined that not every responder would need every type of medical screening exam every year. OSHA estimated the percentage of responders needing each type of exam primarily using frequency recommendations in the 2018 NFPA 1582 standard's recommendations for occupational medical programs and, since some tests are only recommended or needed for firefighters of certain ages or sex, NFPA's (2017) estimate of the number of firefighters by age and sex. The percentage of firefighters needing each exam is multiplied by the unit cost for each exam to derive a weighted average unit cost for initial and periodic medical surveillance (for example, if only half of all firefighters needed a given test, the weighted average per firefighter for all firefighters would be 50 percent of the cost of the test). Table VI-4 shows the percentages and unit costs used in this calculation.

Table VI-2. Unit Burden for Labor-Based Costs by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Response Program (ERP)									
Develop ERP	20	24	24	30	40	60	ESO	Fire Chief	One-time
Update and Revise ERP	4	5	5	6	8	12	ESO	Fire Chief	Annual
Responder Participation-Meetings	8	10	10	12	16	24	ESO	Firefighter	Annual
Responder Participation-Post Sign	0.05	0.05	0.05	0.05	0.05	0.05	ESO	Fire Chief	Annual
Establishment of Service(s) Capability									
Establishment of Service(s) Capability	12	14	14	18	24	36	ESO	Fire Chief	One-time
Develop Mutual Aid Agreements with other ESOs	1	1	1	1	1	2	ESO	Fire Chief	One-time
Community or Facility Vulnerability and Risk Assessment	40	48	48	60	80	120	ESO	Fire Chief	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	12	14	14	18	24	36	ESO	Fire Chief	One-time
Update Written RMP	5	6	6	8	10	15	ESO	Fire Chief	Annual
Responder Medical/Fitness Requirements									
Minimum Medical Requirement – Statement	8	10	10	12	16	24	ESO	Fire Chief	One-time
Confidential Health Database	0.08	0.08	0.08	0.08	0.08	0.08	Responder	Fire Chief	One-time
Physical Performance Requirement - Statement	8	10	10	12	16	24	ESO	Fire Chief	One-time
Develop Physical Performance Rehabilitation Program	8	10	10	12	16	24	ESO	Fire Chief	One-time
Establish Health and Fitness Program -Written Plan	8	10	10	12	16	24	ESO	Fire Chief	One-time
Implement Health and Fitness Program	8	10	10	12	16	24	ESO	Fire Chief	Annual
Medical Surveillance - Initial	2.5	2.5	2.5	2.5	2.5	2.5	Responder	Firefighter	One-time
Medical Surveillance - Periodic	2.5	2.5	2.5	2.5	2.5	2.5	Responder	Firefighter	Varies
Fitness for Duty	2	2	2	2	2	2	Responder	Firefighter	Varies
Behavioral Health & Wellness Program	2	2	2	2	2	2	ESO	Fire Chief	Annual
Responder Training and Qualifications									
Document Responder Training	8	10	10	12	16	24	ESO	Fire Chief	One-time
Initial New Responder Training	178	213	213	266	355	533	Responder	Firefighter	Annual
Ongoing Responder Training	6	7	7	9	12	18	Responder	Firefighter	Annual
Refresher Responder Training	2	2	2	2	3	5	Responder	Firefighter	Annual
Professional Development	20	24	24	30	40	60	Responder	Firefighter	Annual
Document Professional Qualifications	20	24	24	30	40	60	ESO	Fire Chief	Annual
Facility & Equipment Preparedness									
Facility Preparedness	40	48	48	60	80	120	ESO	Fire Chief	Annual

Table VI-2. Unit Burden for Labor-Based Costs by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Equipment Preparedness	40	48	48	60	80	120	ESO	Fire Chief	Annual
Inspect, Maintain, and Test Equipment	40	48	48	40	80	120	ESO	Firefighter	Annual
PPE Hazard Assessment	8	10	10	12	16	24	ESO	Fire Chief	One-time
PPE Provision	8	10	10	12	16	24	ESO	Fire Chief	One-time
PPE Maintenance	40	48	48	60	80	120	ESO	Firefighter	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	8	10	10	12	16	24	ESO	Fire Chief	One-time
Vehicle Inspection and Maintenance	40	48	48	60	80	120	ESO	Fire Chief	Annual
Pre-Incident Planning									
Pre-Incident Planning	20	24	24	30	40	60	ESO	Fire Chief	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	20	24	24	30	40	60	ESO	Fire Chief	One-time
Incident Management System Development									
Incident Management System Development	20	24	24	30	40	60	ESO	Fire Chief	One-time
Emergency Incident Operations									
Emergency Incident Operations	20	24	24	30	40	60	ESO	Fire Chief	One-time
Communicate Commander/Location of Command Post	0.08	0.08	0.08	0.08	0.08	0.08	ESO	Fire Chief	One-time
Changes to Incident Perimeter	0.25	0.25	0.25	0.25	0.25	0.25	ESO	Fire Chief	One-time
Post Incident Analysis									
Post Incident Analysis	8	10	10	12	16	24	ESO	Fire Chief	Annual
ID/Implement Changes to Pre-Incident Plan	1	1	1	1	1	2	ESO	Fire Chief	Annual
ER Program Evaluation									
ER Program Evaluation	20	24	24	30	40	60	ESO	Fire Chief	Annual
ID and Implement Changes to ER Program	0.50	0.50	0.50	0.50	0.50	1.00	ESO	Fire Chief	Annual

Source: OSHA, unless otherwise noted in text.

Table VI-3. Labor-Based Unit Costs by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Response (ER) Program									
Develop ER Program	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	One-time
Update and Revise ER Program	\$597	\$746	\$746	\$895	\$1,193	\$1,790	ESO	Fire Chief	Annual
Responder Participation-Meetings	\$273	\$341	\$341	\$409	\$546	\$819	ESO	Firefighter	Annual
Responder Participation-Post Sign	\$7	\$7	\$7	\$7	\$7	\$7	ESO	Fire Chief	Annual
Establishment of Service(s) Capability	\$1,790	\$2,088	\$2,088	\$2,685	\$3,580	\$5,369	ESO	Fire Chief	One-time
Develop Mutual Aid Agreements with other ESOs	\$149	\$149	\$149	\$149	\$149	\$298	ESO	Fire Chief	One-time
Community or Facility Vulnerability and Risk Assessment	\$5,966	\$7,159	\$7,159	\$8,949	\$11,932	\$17,898	ESO	Fire Chief	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	\$1,790	\$2,088	\$2,088	\$2,685	\$3,580	\$5,369	ESO	Fire Chief	One-time
Update Written RMP	\$746	\$895	\$895	\$1,193	\$1,491	\$2,237	ESO	Fire Chief	Annual
Responder Medical/Fitness Requirements									
Labor Costs									
Minimum Medical Requirement - Statement	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Confidential Health Database	\$12	\$12	\$12	\$12	\$12	\$12	Responder	Fire Chief	One-time
Physical Performance Requirement - Statement	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Develop Physical Performance Rehabilitation Program	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Establish Health and Fitness Program -Written Plan	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Implement Health and Fitness Program	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	Annual
Medical Surveillance - Initial	\$85	\$85	\$85	\$85	\$85	\$85	Responder	Firefighter	One-time
Medical Surveillance - Periodic	\$85	\$85	\$85	\$85	\$85	\$85	Responder	Firefighter	Varies
Fitness for Duty	\$68	\$68	\$68	\$68	\$68	\$68	Responder	Firefighter	Varies
Behavioral Health & Wellness Program	\$298	\$298	\$298	\$298	\$298	\$298	ESO	Fire Chief	Annual
Responder Training and Qualifications									
Document Responder Training	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Initial New Responder Training	\$6,073	\$7,267	\$7,267	\$9,075	\$12,111	\$18,184	Responder	Firefighter	Annual
Ongoing Responder Training	\$205	\$239	\$239	\$307	\$409	\$614	Responder	Firefighter	Annual
Refresher Responder Training	\$68	\$68	\$68	\$68	\$102	\$171	Responder	Firefighter	Annual
Professional Development	\$682	\$819	\$819	\$1,023	\$1,365	\$2,047	Responder	Firefighter	Annual
Document Professional Qualifications	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	Annual
Facility & Equipment Preparedness									
Facility Preparedness	\$5,966	\$7,159	\$7,159	\$8,949	\$11,932	\$17,898	ESO	Fire Chief	Annual

Table VI-3. Labor-Based Unit Costs by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Equipment Preparedness	\$5,966	\$7,159	\$7,159	\$8,949	\$11,932	\$17,898	ESO	Fire Chief	Annual
Inspect, Maintain, and Test Equipment	\$1,365	\$1,638	\$1,638	\$1,365	\$2,729	\$4,094	ESO	Firefighter	Annual
PPE Hazard Assessment	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
PPE Provision	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
PPE Maintenance	\$1,365	\$1,638	\$1,638	\$2,047	\$2,729	\$4,094	ESO	Firefighter	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	One-time
Vehicle Inspection and Maintenance	\$5,966	\$7,159	\$7,159	\$8,949	\$11,932	\$17,898	ESO	Fire Chief	Annual
Pre-Incident Planning									
Pre-Incident Planning	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	One-time
Incident Management System Development									
Incident Management System Development	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	One-time
Emergency Incident Operations									
Emergency Incident Operations	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	One-time
Communicate Commander/Location of Command Post	\$12	\$12	\$12	\$12	\$12	\$12	ESO	Fire Chief	One-time
Changes to Incident Perimeter	\$37	\$37	\$37	\$37	\$37	\$37	ESO	Fire Chief	One-time
Post Incident Analysis									
Post Incident Analysis	\$1,193	\$1,491	\$1,491	\$1,790	\$2,386	\$3,580	ESO	Fire Chief	Annual
ID/Implement Changes to Pre-Incident Plan	\$149	\$149	\$149	\$149	\$149	\$298	ESO	Fire Chief	Annual
ER Program Evaluation									
ER Program Evaluation	\$2,983	\$3,580	\$3,580	\$4,474	\$5,966	\$8,949	ESO	Fire Chief	Annual
ID and Implement Changes to ER Program	\$75	\$75	\$75	\$75	\$75	\$149	ESO	Fire Chief	Annual

Sources: OSHA based on BLS (2018), BLS (2019), EPA (2002) and Rice (2002).

Note: Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Table VI-4. Medical Surveillance Unit Costs for All Employment Size Classes - Fire Departments and Firefighters

	All Size Classes	Basis	Frequency
Initial Medical Surveillance			
% Receiving Each Exam			
Office Visit – Initial	100.0%	Responder	One-time
EKG – Initial	49.1%	Responder	One-time
Audiogram – Initial	100.0%	Responder	One-time
Spirometry – Initial	100.0%	Responder	One-time
Chest X–Ray – Initial	100.0%	Responder	One-time
TB Screening – Initial	100.0%	Responder	One-time
Hepatitis C Screening – Initial	100.0%	Responder	One-time
Unit Medical Costs			
Office Visit – Initial	\$78	Responder	One-time
EKG – Initial	\$17	Responder	One-time
Audiogram – Initial	\$33	Responder	One-time
Spirometry – Initial	\$37	Responder	One-time
Chest X–Ray – Initial	\$42	Responder	One-time
TB Screening – Initial	\$8	Responder	One-time
Hepatitis C Screening – Initial	\$45	Responder	One-time
Weighted Average Unit Cost - Initial	\$253	Responder	One-time
Periodic Medical Surveillance			
% Receiving Each Exam			
Office Visit – Periodic	100.0%	Responder	Annual
Audiogram – Periodic	100.0%	Responder	Annual
Mammography – Periodic	2.7%	Responder	Annual
Spirometry – Periodic	25.0%	Responder	Annual
EKG – Periodic	49.1%	Responder	Annual
Colonoscopy– Periodic	2.5%	Responder	Annual
Lung Cancer Screening Using Low-Dose CT	1.3%	Responder	Annual
HIV Screening – Periodic	25.0%	Responder	Annual
Blood Tests – Periodic	66.1%	Responder	Annual

Table VI-4. Medical Surveillance Unit Costs for All Employment Size Classes - Fire Departments and Firefighters

	All Size Classes	Basis	Frequency
Urinalysis – Periodic	100.0%	Responder	Annual
PSA Testing – Periodic	23.3%	Responder	Annual
TB Screening – Periodic	100.0%	Responder	Annual
Immunization – Influenza – Periodic	80.0%	Responder	Annual
Immunization – TDAP – Periodic	10.0%	Responder	Annual
Immunization – MMR – Periodic	5.0%	Responder	Annual
Immunization – Varicella – Periodic	5.0%	Responder	Annual
Immunization – Hepatitis A/Hepatitis B – Periodic	5.0%	Responder	Annual
Immunization – Administration – Periodic	10.0%	Responder	Annual
Misc. Testing – Periodic	0.0%	Responder	Annual
Unit Medical Costs			
Office Visit – Periodic	\$78	Responder	Annual
Audiogram – Periodic	\$33	Responder	Annual
Mammography – Periodic	\$140	Responder	Annual
Spirometry – Periodic	\$37	Responder	Annual
EKG – Periodic	\$17	Responder	Annual
Colonoscopy – Periodic	\$196	Responder	Annual
Lung Cancer Screening Using Low-Dose CT	\$242	Responder	Annual
HIV Screening – Periodic	\$18	Responder	Annual
Blood Tests – Periodic	\$74	Responder	Annual
Urinalysis – Periodic	\$4	Responder	Annual
PSA Testing – Periodic	\$23	Responder	Annual
TB Screening – Periodic	\$8	Responder	Annual
Immunization – Influenza – Periodic	\$17	Responder	Annual
Immunization – TDAP – Periodic	\$44	Responder	Annual
Immunization – MMR – Periodic	\$71	Responder	Annual
Immunization – Varicella – Periodic	\$122	Responder	Annual
Immunization – Hepatitis A/Hepatitis B – Periodic	\$101	Responder	Annual
Immunization – Administration – Periodic	\$115	Responder	Annual

Table VI-4. Medical Surveillance Unit Costs for All Employment Size Classes - Fire Departments and Firefighters

	All Size Classes	Basis	Frequency
Misc. Testing – Periodic	\$0.00	Responder	Annual
Weighted Average Unit Cost - Periodic	\$256	Responder	Annual

Sources: OSHA based on CMS, 2018a, CMS, 2018b, CDC, 2018, Joshi, 2014, HAP, 2016, NFPA, 2017, and NFPA, 2018.

Note: Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Emergency Medical Services

Table VI-5 shows the estimated unit labor burden for each requirement in the draft standard for emergency medical services by ESO size. As with fire departments, in most cases the initial estimate of the unit cost was developed for the 250-499 employee size class and then scaled proportionally to estimate the unit costs for other size classes.

Unless otherwise noted in this section, the time estimates for complying with draft provisions are based on OSHA’s professional expertise, taking into account what the draft standard requires and estimates of the hours necessary to comply with similar requirements in other OSHA rules. The agency requests feedback from SBREFA participants on all aspects of these cost estimates.

The initial training time for EMS providers varies widely depending on the responder’s certification level. Estimates for training hours for emergency responders, basic EMTs, advanced EMTs and paramedics were based on information from the National Highway Traffic Safety Administration’s (NHTSA, 2009) Emergency Medical Services (EMS) National Emergency Medical Services Education Standards and UCLA Center for Prehospital Care (2018). NHTSA (2009) reports a range of hours of training needed to attain each certification level. Based on an initial assumption that EMS providers at smaller ESOs will have lower levels of certification, OSHA assigned the estimated hours of training at the low end of that range to the smallest establishments (those with <25 and 25-49 employees) and the hours of training estimated at the higher end of that range to the remaining size classes. The agency then estimated the weighted average initial training hours by multiplying the number of training hours by the estimated share of responders of each certification level (NAEMT, 2014).

OSHA used a similar approach to estimate the hours required for ongoing training. OSHA took the estimates for training hours for emergency responders, basic EMTs, advanced EMTs and paramedics from the National Registry of Emergency Medical Technicians (NREMT, 2018a-d), and multiplied those estimates by the estimated share of responders of each certification level (NAEMT, 2014) to estimate the weighted average ongoing training hours.

Table VI-5 also shows whether a unit cost is applied per ESO or per responder, the type of worker expected to undertake a given activity, and whether an activity is estimated to take place one-time or annually.

Table VI-6 shows the estimated unit cost by entity size for each requirement in the draft standard. For the labor costs shown in Table VI-6, the unit burden is multiplied by the loaded hourly wage for the type of worker that would perform each task (see Table VI-7). For the majority of the per department unit costs, OSHA preliminarily estimates that an Emergency Management Director (SOC 11-9160) with a loaded hourly wage of \$58.55 per hour (BLS, 2018; BLS, 2019) will undertake that activity. All per employee costs are calculated using the weighted

average loaded hourly wage for an EMT/paramedic (SOC 29-2041), \$27.41 (derived from BLS (2018) and BLS (2019) as described above.

The unit costs for medical surveillance are drawn from the Centers for Medicare and Medicaid's (CMS, 2018a) Physician's Fee Schedule for 2018, CMS' (2018b) Clinical Laboratory Fee Schedule, the Centers for Disease Control and Prevention (CDC, 2018) Adult Vaccine Price List, Joshi's (2014) estimate of the cost of Hepatitis C screening, and Healthcare Administrative Providers' (HAP, 2016) estimate of the cost of a CT scan to screen for lung cancer. The costs are applied on a per employee basis but – other than the time needed to complete these medical exams – do not depend on the wage rate.

EMS providers engage in less physically demanding tasks and have a lower risk of exposure to hazardous environments or materials relative to firefighters and therefore EMS providers have fewer medical exam requirements. OSHA has judged the tests likely necessary for EMS providers based on consultation with occupational physicians and other personnel with experience in the area. The agency has preliminarily determined that EMS providers would not generally need to receive the following periodic exam elements under the draft standard: audiograms, spirometry, EKGs, colonoscopies, CT screenings for lung cancer, HIV screening, blood tests, urinalysis, PSA testing, and TB screening. Similar to firefighters, only certain EMS providers need given tests depending on age and sex. The percentage needing each exam is multiplied by the unit cost for each exam to derive a weighted average unit cost for initial and periodic medical surveillance. Table VI-7 shows the percentages and unit costs used in this calculation.

Table VI-5. Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Response Program (ER)									
Develop ER Program	20	24	24	30	40	60	ESO	EMD	One-time
Update and Revise ER Program	4	5	5	6	8	12	ESO	EMD	Annual
Responder Participation-Meetings	8	10	10	12	16	24	ESO	EMT/Paramedic	Annual
Responder Participation-Post Sign	0.05	0.05	0.05	0.05	0.05	0.05	ESO	EMD	Annual
Establishment of Service(s) Capability									
Establishment of Service(s) Capability	12	14	14	18	24	36	ESO	EMD	One-time
Develop Mutual Aid Agreements with other ESOs	1	1	1	1	1	2	ESO	EMD	One-time
Community or Facility Vulnerability and Risk Assessment	40	48	48	60	80	120	ESO	EMD	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	12	14	14	18	24	36	ESO	EMD	One-time
Update Written RMP	5	6	6	8	10	15	ESO	EMD	Annual
Responder Medical/Fitness Requirements									
Minimum Medical Requirement - Statement	8	10	10	12	16	24	ESO	EMD	One-time
Confidential Health Database	0.08	0.08	0.08	0.08	0.08	0.08	Responder	EMD	One-time
Physical Performance Requirement - Statement	8	10	10	12	16	24	ESO	EMD	One-time
Develop Physical Performance Rehabilitation Program	8	10	10	12	16	24	ESO	EMD	One-time
Establish Health and Fitness Program -Written Plan	8	10	10	12	16	24	ESO	EMD	One-time
Implement Health and Fitness Program	8	10	10	12	16	24	ESO	EMD	Annual
Medical Surveillance – Initial	2.5	2.5	2.5	2.5	2.5	2.5	Responder	EMT/Paramedic	One-time
Medical Surveillance – Periodic	2.5	2.5	2.5	2.5	2.5	2.5	Responder	EMT/Paramedic	Varies
Fitness for Duty	0.25	0.25	0.25	0.25	0.25	0.25	Responder	EMT/Paramedic	Varies
Behavioral Health & Wellness Program	1	1	1	2	2	3	ESO	EMD	Annual
Responder Training and Qualifications									
Document Responder Training	8	10	10	12	16	24	ESO	EMT/Paramedic	One-time
Initial New Responder Training	503.84	503.84	761.23	761.23	761.23	761.23	Responder	EMT/Paramedic	Annual
<i>EMR</i>	48	48	60	60	60	60	Responder	EMT/Paramedic	Annual
<i>EMT</i>	120	120	190	190	190	190	Responder	EMT/Paramedic	Annual
<i>Advanced EMT (AEMT)</i>	150	150	250	250	250	250	Responder	EMT/Paramedic	Annual
<i>Paramedic</i>	1,200	1,200	1,800	1,800	1,800	1,800	Responder	EMT/Paramedic	Annual

Table VI-5. Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Ongoing Responder Training	45.67	45.67	45.67	45.67	45.67	45.67	Responder	EMT/Paramedic	Annual
<i>EMR</i>	16	16	16	16	16	16	Responder	EMT/Paramedic	Annual
<i>EMT</i>	40	40	40	40	40	40	Responder	EMT/Paramedic	Annual
<i>Advanced EMT (AEMT)</i>	50	50	50	50	50	50	Responder	EMT/Paramedic	Annual
<i>Paramedic</i>	60	60	60	60	60	60	Responder	EMT/Paramedic	Annual
Refresher Responder Training	2	2	2	2	3	5	Responder	EMT/Paramedic	Annual
Professional Development	20	24	24	30	40	60	Responder	EMT/Paramedic	Annual
Document Professional Qualifications	20	24	24	30	40	60	ESO	EMD	Annual
Facility & Equipment Preparedness									
Facility Preparedness	8	10	10	12	16	24	ESO	EMD	Annual
Equipment Preparedness	40	48	48	60	80	120	ESO	EMD	Annual
Inspect, Maintain, and Test Equipment	40	48	48	60	80	120	ESO	EMD	Annual
PPE Hazard Assessment	2	2	2	3	4	6	ESO	EMD	One-time
PPE Provision	1	1	1	1	2	2	ESO	EMD	One-time
PPE Maintenance	4	5	5	6	8	12	ESO	EMD	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	12	14	14	18	24	36	ESO	EMD	One-time
Vehicle Inspection and Maintenance	40	48	48	60	80	120	ESO	EMD	Annual
Pre-Incident Planning									
Pre-Incident Planning	20	24	24	30	40	60	ESO	EMD	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	20	24	24	30	40	60	ESO	EMD	One-time
Incident Management System Development									
Incident Management System Development	20	24	24	30	40	60	ESO	EMD	One-time
Emergency Incident Operations									
Emergency Incident Operations	20	24	24	30	40	60	ESO	EMD	One-time
Communicate Commander/Location of Command Post	0.08	0.08	0.08	0.08	0.08	0.08	ESO	EMD	One-time
Changes to Incident Perimeter	0.25	0.25	0.25	0.25	0.25	0.25	ESO	EMD	One-time
Post Incident Analysis									
Post Incident Analysis	8	10	10	12	16	24	ESO	EMD	Annual
ID/Implement Changes to Pre-Incident Plan	1	1	1	1	1	2	ESO	EMD	Annual

Table VI-5. Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
ER Program Evaluation									
ER Program Evaluation	20	24	24	30	40	60	ESO	EMD	Annual
ID and Implement Changes to ER Program	1	1	1	1	1	1	ESO	EMD	Annual

Source: OSHA.

Table VI-6. Labor-Based Unit Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers
Reduced decimals showing on unit costs to zero and added note about (lack of) rounding.

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Responder (ER) Program									
Develop ER Program	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	One-time
Update and Revise ER Program	\$234	\$293	\$293	\$351	\$468	\$703	ESO	EMD	Annual
Responder Participation-Meetings	\$219	\$274	\$274	\$329	\$439	\$658	ESO	EMT/Paramedic	Annual
Responder Participation-Post Sign	\$3	\$3	\$3	\$3	\$3	\$3	ESO	EMD	Annual
Establishment of Service(s) Capability	\$703	\$820	\$820	\$1,054	\$1,405	\$2,108	ESO	EMD	One-time
Develop Mutual Aid Agreements with other ESOs	\$59	\$59	\$59	\$59	\$59	\$117	ESO	EMD	One-time
Community or Facility Vulnerability and Risk Assessment	\$2,342	\$2,810	\$2,810	\$3,513	\$4,684	\$7,026	ESO	EMD	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	\$703	\$820	\$820	\$1,054	\$1,405	\$2,108	ESO	EMD	One-time
Update Written RMP	\$293	\$351	\$351	\$468	\$585	\$878	ESO	EMD	Annual
Responder Medical/Fitness Requirements									
Labor Costs									
Minimum Medical Requirement - Statement	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	One-time
Confidential Health Database	\$5	\$5	\$5	\$5	\$5	\$5	Responder	EMD	One-time
Physical Performance Requirement - Statement	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	One-time
Develop Physical Performance Rehabilitation Program	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	One-time
Establish Health and Fitness Program -Written Plan	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	One-time
Implement Health and Fitness Program	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	Annual
Medical Surveillance - Initial	\$69	\$69	\$69	\$69	\$69	\$69	Responder	EMT/Paramedic	One-time
Medical Surveillance - Periodic	\$69	\$69	\$69	\$69	\$69	\$69	Responder	EMT/Paramedic	Varies
Fitness for Duty	\$7	\$7	\$7	\$7	\$7	\$7	Responder	EMT/Paramedic	Varies
Behavioral Health & Wellness Program	\$59	\$59	\$59	\$117	\$117	\$176	ESO	EMD	Annual
Responder Training and Qualifications									
Document Responder Training	\$219	\$274	\$274	\$329	\$439	\$658	ESO	EMT/Paramedic	One-time
Initial New Responder Training	\$13,810	\$13,810	\$20,865	\$20,865	\$20,865	\$20,865	Responder	EMT/Paramedic	Annual
Ongoing Responder Training	\$1,252	\$1,252	\$1,252	\$1,252	\$1,252	\$1,252	Responder	EMT/Paramedic	Annual
Refresher Responder Training	\$55	\$55	\$55	\$55	\$82	\$137	Responder	EMT/Paramedic	Annual
Professional Development	\$548	\$658	\$658	\$822	\$1,096	\$1,645	Responder	EMT/Paramedic	Annual
Document Professional Qualifications	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	Annual

Table VI-6. Labor-Based Unit Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers
Reduced decimals showing on unit costs to zero and added note about (lack of) rounding.

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Facility & Equipment Preparedness									
Facility Preparedness	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	Annual
Equipment Preparedness	\$2,342	\$2,810	\$2,810	\$3,513	\$4,684	\$7,026	ESO	EMD	Annual
Inspect, Maintain, and Test Equipment	\$2,342	\$2,810	\$2,810	\$3,513	\$4,684	\$7,026	ESO	EMD	Annual
PPE Hazard Assessment	\$117	\$117	\$117	\$176	\$234	\$351	ESO	EMD	One-time
PPE Provision	\$59	\$59	\$59	\$59	\$94	\$117	ESO	EMD	One-time
PPE Maintenance	\$234	\$293	\$293	\$351	\$468	\$703	ESO	EMD	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	\$703	\$820	\$820	\$1,054	\$1,405	\$2,108	ESO	EMD	One-time
Vehicle Inspection and Maintenance	\$2,342	\$2,810	\$2,810	\$3,513	\$4,684	\$7,026	ESO	EMD	Annual
Pre-Incident Planning									
Pre-Incident Planning	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	One-time
Incident Management System Development									
Incident Management System Development	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	One-time
Emergency Incident Operations									
Emergency Incident Operations	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	One-time
Communicate Commander/Location of Command Post	\$5	\$5	\$5	\$5	\$5	\$5	ESO	EMD	One-time
Changes to Incident Perimeter	\$15	\$15	\$15	\$15	\$15	\$15	ESO	EMD	One-time
Post Incident Analysis									
Post Incident Analysis	\$468	\$585	\$585	\$703	\$937	\$1,405	ESO	EMD	Annual
ID/Implement Changes to Pre-Incident Plan	\$59	\$59	\$59	\$59	\$59	\$117	ESO	EMD	Annual
ER Program Evaluation									
ER Program Evaluation	\$1,171	\$1,405	\$1,405	\$1,756	\$2,342	\$3,513	ESO	EMD	Annual
ID and Implement Changes to ER Program	\$59	\$59	\$59	\$59	\$59	\$59	ESO	EMD	Annual

Sources: OSHA based on BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002.

Note: Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Table VI-7. Medical Surveillance Unit Costs for All Employment Size Classes - Emergency Medical Service Organizations and EMS Providers

	All Size Classes	Basis	Frequency
Initial Medical Surveillance			
% Receiving Each Exam			
Office Visit – Initial	100.0%	Responder	One-time
EKG – Initial	49.1%	Responder	One-time
Audiogram – Initial	100.0%	Responder	One-time
Spirometry – Initial	100.0%	Responder	One-time
Chest X-Ray – Initial	100.0%	Responder	One-time
TB Screening – Initial	100.0%	Responder	One-time
Hepatitis C Screening – Initial	100.0%	Responder	One-time
Unit Medical Costs			
Office Visit – Initial	\$78	Responder	One-time
EKG – Initial	\$17	Responder	One-time
Audiogram – Initial	\$33	Responder	One-time
Spirometry – Initial	\$37	Responder	One-time
Chest X-Ray – Initial	\$42	Responder	One-time
TB Screening – Initial	\$8	Responder	One-time
Hepatitis C Screening – Initial	\$45	Responder	One-time
Weighted Average Unit Cost – Initial	\$253	Responder	One-time
Periodic Medical Surveillance			
% Receiving Each Exam			
Office Visit – Periodic	100.0%	Responder	Annual
Mammography – Periodic	2.7%	Responder	Annual
Immunization – Influenza – Periodic	80.0%	Responder	Annual
Immunization – TDAP – Periodic	10.0%	Responder	Annual
Immunization – MMR – Periodic	5.0%	Responder	Annual
Immunization – Varicella – Periodic	5.0%	Responder	Annual
Immunization – Hepatitis A/Hepatitis B – Periodic	5.0%	Responder	Annual
Immunization – Administration – Periodic	10.0%	Responder	Annual
Unit Medical Costs			
Office Visit – Periodic	\$78	Responder	Annual
Audiogram – Periodic	\$33	Responder	Annual

Table VI-7. Medical Surveillance Unit Costs for All Employment Size Classes - Emergency Medical Service Organizations and EMS Providers

	All Size Classes	Basis	Frequency
Mammography – Periodic	\$140	Responder	Annual
Spirometry – Periodic	\$37	Responder	Annual
EKG – Periodic	\$17	Responder	Annual
Colonoscopy– Periodic	\$196	Responder	Annual
Lung Cancer Screening Using Low-Dose CT	\$242	Responder	Annual
HIV Screening – Periodic	\$18	Responder	Annual
Blood Tests – Periodic	\$74	Responder	Annual
Urinalysis – Periodic	\$4	Responder	Annual
PSA Testing – Periodic	\$23	Responder	Annual
TB Screening – Periodic	\$8	Responder	Annual
Immunization – Influenza – Periodic	\$17	Responder	Annual
Immunization – TDAP – Periodic	\$44	Responder	Annual
Immunization – MMR – Periodic	\$71	Responder	Annual
Immunization – Varicella – Periodic	\$122	Responder	Annual
Immunization – Hepatitis A/Hepatitis B – Periodic	\$101	Responder	Annual
Immunization – Administration – Periodic	\$115	Responder	Annual
Weighted Average Unit Cost – Periodic	\$126	Responder	Annual

Sources: OSHA based on CMS, 2018a, CMS, 2018b, CDC, 2018, Joshi, 2014, HAP, 2016, CMS, 2018a, NFPA, 2017, and NFPA, 2018.

Wildland Firefighting Services

Wildland firefighting services providers include private sector ESOs that provide less common types of firefighting services, primarily to states and Federal agencies. These services typically support wildland fire suppression and include direct firefighting as well as support services such as transportation, food supply services, and others. The numbers of such ESOs and the associated personnel dedicated for this purpose are uncertain, and as such, OSHA does not estimate the cost *specific* to wildland firefighting services but includes them as part of private firefighting ESOs.

Skilled Support Employers

While OSHA does not estimate the aggregate costs for Skilled Support Employers (due to uncertainty over the industry profile), Table VI-8 shows OSHA's estimated unit burden and cost for Skilled Support Employers for each provision of the draft standard. These unit costs are modeled on the time estimates developed for firefighter ESOs previously, with some adjustment for the specific provisions covering Skilled Support Employers.

Table VI-8. Unit Burden and Cost by ESO Size - Skilled Support

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Unit Burden – in Hours									
Establishment of Emergency Services Provided	1	2	2	2	3	4	SSE	Skilled Support Supervisors	One-time
Medical Screening - Initial	1	1	1	1	1	2	SSW	Skilled Support Workers	One-time
Medical Screening - Annual	0.5	0.5	0.5	0.5	0.5	1	SSW	Skilled Support Workers	Annual
Fatigue Management Plan	2	2	2	2	3	5	SSE	Skilled Support Supervisors	One-time
Decontamination SOPs	1	2	2	2	3	4	SSE	Skilled Support Supervisors	One-time
PPE Hazard Assessment	1	1	1	1	1	1	SSE	Skilled Support Supervisors	One-time
Training - Records, etc.	0.65	0.65	0.65	0.65	0.65	1	SSE	Skilled Support Supervisors	One-time
Training - Responder	8	8	8	8	8	8	SSW	Skilled Support Workers	Annual
Worker Participation	1	1	1	2	2	3	SSW	Skilled Support Workers	One-time
Program Evaluation	0.30	0.30	0.30	0.30	0.30	0.30	SSE	Skilled Support Supervisors	Annual
Unit Cost									
Establishment of Emergency Services Provided	\$51	\$103	\$103	\$103	\$128	\$205	SSE	Skilled Support Supervisors	One-time
Medical Screening - Initial	\$35	\$35	\$35	\$35	\$35	\$70	SSW	Skilled Support Workers	One-time
Medical Screening - Annual	\$18	\$18	\$18	\$18	\$18	\$35	SSW	Skilled Support Workers	Annual
Fatigue Management Plan	\$103	\$103	\$103	\$103	\$154	\$257	SSE	Skilled Support Supervisors	One-time
Decontamination SOPs	\$51	\$103	\$103	\$103	\$128	\$205	SSE	Skilled Support Supervisors	One-time
PPE Hazard Assessment	\$26	\$26	\$26	\$26	\$26	\$51	SSE	Skilled Support Supervisors	One-time
Training - Records, etc.	\$33	\$33	\$33	\$33	\$33	\$51	SSE	Skilled Support Supervisors	One-time
Training – Responder	\$282	\$282	\$282	\$282	\$282	\$282	SSW	Skilled Support Workers	Annual
Worker Participation	\$35	\$35	\$35	\$70	\$70	\$106	SSW	Skilled Support Workers	One-time
Program Evaluation	\$15	\$15	\$15	\$15	\$15	\$15	SSE	Skilled Support Supervisors	Annual

Sources: OSHA based on BLS (2018), BLS (2019), EPA (2002) and Rice (2002).

Note: Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Baseline Non-Compliance Rates

Table VI-9 shows the estimated baseline non-compliance rate for each provision of the draft standard by entity size, for both fire departments and EMS providers. OSHA has preliminarily determined that few to no small ESOs currently have many of the plans required by the draft standard while the majority of very large ESOs are doing much of what this draft rule would require. This is consistent with the idea that larger departments likely have more resources to implement consensus standards like NFPA 1582. OSHA’s estimates of baseline non-compliance rates were based on consultation with emergency response organizations and the professional experience of OSHA personnel and, similar to unit time estimates, were first estimated for ESOs with 250-499 responders and then scaled to the other size classes.

Table VI-9. Baseline Non-Compliance Rate by Provision and ESO Size

Provision	ESO Size by Number of Responders					
	<25	25-49	50-99	100-249	250-499	500+
Fire Departments and Firefighters						
ER Program	19%	18%	15%	13%	10%	8%
Establishment of Service(s) Capability	93%	88%	75%	63%	50%	38%
Organization Risk Management Plan	93%	88%	75%	63%	50%	38%
Medical/Fitness Requirements	93%	88%	75%	63%	50%	38%
Training	9%	9%	8%	6%	5%	4%
Facility Preparedness & PPE	37%	35%	30%	25%	20%	15%
Vehicle Preparedness & Operations	28%	26%	23%	19%	15%	11%
Pre-Incident Planning	100%	100%	100%	88%	70%	53%
SOPs	100%	100%	100%	88%	70%	53%
Incident Management System Development	28%	26%	23%	19%	15%	11%
Emergency Incident Operations	19%	18%	15%	13%	10%	8%
Post Incident Analysis	100%	100%	100%	100%	80%	60%
ER Program Evaluation	100%	100%	100%	100%	90%	68%
Emergency Medical Services						
ER Program	19%	18%	15%	13%	10%	8%
Establishment of Service(s) Capability	93%	88%	75%	63%	50%	38%
Organization Risk Management Plan	93%	88%	75%	63%	50%	38%
Medical/Fitness Requirements	93%	88%	75%	63%	50%	38%
Training	9%	9%	8%	6%	5%	4%
Facility Preparedness & PPE	37%	35%	30%	25%	20%	15%
Vehicle Preparedness & Operations	28%	26%	23%	19%	15%	11%
Pre-Incident Planning	100%	100%	100%	88%	70%	53%
SOPs	100%	100%	100%	88%	70%	53%
Incident Management System Development	28%	26%	23%	19%	15%	11%
Emergency Incident Operations	19%	18%	15%	13%	10%	8%
Post Incident Analysis	100%	100%	100%	100%	80%	60%
ER Program Evaluation	100%	100%	100%	100%	90%	68%

Source: OSHA.

Total Costs

Total Costs by Provision

This section details the costs of some provisions of the draft standard that are of particular interest. Table VI-10 combines the unit cost per ESO or per responder with the number of affected ESOs or responders and then adjusts those total cost calculations by the non-compliance rate in order to estimate the incremental costs of each component of medical screening and surveillance for those ESOs not currently in compliance with those requirements of the draft standard. Table VI-10 details the derivation of the medical and fitness costs for each provision by ESO size for firefighting ESOs and EMS ESOs. Table VI-11 shows the total costs of the medical and fitness provisions.

Consistent with the requirements from Circular A-4 published by the Office of Management and Budget, OSHA presents economic costs using discounting. Discounting is a way to represent the value in the present of costs that occur over time and is based on the idea that people prefer present to future consumption and that resources that are invested in the present normally have a positive return and result in a greater payout than what was initially invested. The discount rate represents the expected return on investment. By annualizing costs, this analysis spreads out the costs equally over a number of years – similar to how a loan is paid in equal monthly installments. For more information on discounting, see Circular A-4 (<https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf>).

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
Minimum Medical Requirement - Statement									
Fire Departments and Firefighters									
<25	4,296	–	\$1,193	\$5,125,868	–	93%	\$4,767,057	\$678,722	\$558,845
25-49	4,879	–	\$1,491	\$7,276,859	–	88%	\$6,403,636	\$911,734	\$750,701
50-99	1,686	–	\$1,491	\$2,514,610	–	75%	\$1,885,957.83	\$268,518	\$221,092
100-249	567	–	\$1,790	\$1,014,793	–	63%	\$639,320	\$91,025	\$74,948
250-499	100	–	\$2,386	\$238,634	–	50%	\$119,317	\$16,988	\$13,988
500+	59	–	\$3,580	\$211,191	–	38%	\$80,253	\$11,426	\$9,408
Subtotal	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Emergency Medical Services									
<25	4,126	–	\$468	\$1,932,507	–	93%	\$1,797,232	\$255,885	\$210,690
25-49	1,210	–	\$585	\$708,158	–	88%	\$623,179	\$88,727	\$73,056
50-99	615	–	\$585	\$360,301	–	75%	\$270,226	\$38,474	\$31,679
100-249	342	–	\$703	\$240,549	–	63%	\$151,546	\$21,577	\$17,766
250-499	108	–	\$937	\$101,571	–	50%	\$50,785	\$7,231	\$5,954
500+	187	–	\$1,405	\$262,754	–	38%	\$99,847	\$14,216	\$11,705
Subtotal	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Total									
<25	8,422	–	\$838	\$7,058,375	–	93%	\$6,564,289	\$934,607	\$769,535
25-49	6,089	–	\$1,311	\$7,985,017	–	88%	\$7,026,815	\$1,000,460	\$823,757
50-99	2,301	–	\$1,249	\$2,874,912	–	75%	\$2,156,184	\$306,992	\$252,771
100-249	909	–	\$1,380	\$1,255,342	–	63%	\$790,865	\$112,601	\$92,714
250-499	208	–	\$1,632	\$340,205	–	50%	\$170,103	\$24,219	\$19,941
500+	246	–	\$1,927	\$473,946	–	38%	\$180,099	\$25,642	\$21,113
Total	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Confidential Health Database									
Fire Departments and Firefighters									
<25	–	73,050	\$12	\$871,614	–	93%	\$810,601	\$115,411	\$95,027
25-49	–	154,364	\$12	\$1,841,826	–	88%	\$1,620,807	\$230,766	\$190,008
50-99	–	105,775	\$12	\$1,262,074	–	75%	\$946,555	\$134,768	\$110,965
100-249	–	77,711	\$12	\$927,221	–	63%	\$584,149	\$83,170	\$68,480
250-499	–	33,339	\$12	\$397,788	–	50%	\$198,894	\$28,318	\$23,316

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
500+	–	80,251	\$12	\$957,533	–	38%	\$363,862	\$51,806	\$42,656
Subtotal	–	524,489	\$12	\$6,258,056	–	72%	\$4,524,869	\$644,240	\$530,453
Emergency Medical Services									
<25	–	45,539	\$5	\$213,289	–	93%	\$198,359	\$28,242	\$23,254
25-49	–	47,732	\$5	\$223,563	–	88%	\$196,736	\$28,011	\$23,063
50-99	–	48,831	\$5	\$228,709	–	75%	\$171,532	\$24,422	\$20,109
100-249	–	57,243	\$5	\$268,105	–	63%	\$168,906	\$24,048	\$19,801
250-499	–	35,795	\$5	\$167,654	–	50%	\$83,827	\$11,935	\$9,827
500+	–	129,885	\$5	\$608,337	–	38%	\$231,168	\$32,913	\$27,100
Subtotal	–	365,025	\$5	\$1,709,659	–	61%	\$1,050,528	\$149,572	\$123,154
Total									
<25	–	118,589	\$9	\$1,084,903	–	93%	\$1,008,960	\$143,653	\$118,281
25-49	–	202,096	\$10	\$2,065,390	–	88%	\$1,817,543	\$258,777	\$213,071
50-99	–	154,606	\$10	\$1,490,783	–	75%	\$1,118,087	\$159,190	\$131,074
100-249	–	134,953	\$9	\$1,195,327	–	63%	\$753,056	\$107,218	\$88,281
250-499	–	69,134	\$8	\$565,442	–	50%	\$282,721	\$40,253	\$33,144
500+	–	210,136	\$7	\$1,565,870	–	38%	\$595,031	\$84,719	\$69,756
Total	–	889,514	\$9	\$7,967,714	–	70%	\$5,575,397	\$793,811	\$653,607
Physical Performance Requirement - Statement									
Fire Departments and Firefighters									
<25	4,296	–	\$1,193	\$5,125,868	–	93%	\$4,767,057	\$678,722	\$558,845
25-49	4,879	–	\$1,491	\$7,276,859	–	88%	\$6,403,636	\$911,734	\$750,701
50-99	1,686	–	\$1,491	\$2,514,610	–	75%	\$1,885,958	\$268,518	\$221,092
100-249	567	–	\$1,790	\$1,014,793	–	63%	\$639,320	\$91,025	\$74,948
250-499	100	–	\$2,386	\$238,634	–	50%	\$119,317	\$16,988	\$13,988
500+	59	–	\$3,580	\$211,191	–	38%	\$80,253	\$11,426	\$9,408
Subtotal	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Emergency Medical Services									
<25	4,126	–	\$468	\$1,932,507	–	93%	\$1,797,232	\$255,885	\$210,690
25-49	1,210	–	\$585	\$708,158	–	88%	\$623,179	\$88,727	\$73,056
50-99	615	–	\$585	\$360,301	–	75%	\$270,226	\$38,474	\$31,679
100-249	342	–	\$703	\$240,549	–	63%	\$151,546	\$21,577	\$17,766

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
250-499	108	–	\$937	\$101,571	–	50%	\$50,785	\$7,231	\$5,954
500+	187	–	\$1,405	\$262,754	–	38%	\$99,847	\$14,216	\$11,705
Subtotal	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Total									
<25	8,422	–	\$838	\$7,058,375	–	93%	\$6,564,289	\$934,607	\$769,535
25-49	6,089	–	\$1,311	\$7,985,017	–	88%	\$7,026,815	\$1,000,460	\$823,757
50-99	2,301	–	\$1,249	\$2,874,912	–	75%	\$2,156,184	\$306,992	\$252,771
100-249	909	–	\$1,380	\$1,255,342	–	63%	\$790,865	\$112,601	\$92,714
250-499	208	–	\$1,632	\$340,205	–	50%	\$170,103	\$24,219	\$19,941
500+	246	–	\$1,927	\$473,946	–	38%	\$180,099	\$25,642	\$21,113
Total	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Develop Physical Performance Rehabilitation Program									
Fire Departments and Firefighters									
<25	4,296	–	\$1,193	\$5,125,868	–	93%	\$4,767,057	\$678,722	\$558,845
25-49	4,879	–	\$1,491	\$7,276,859	–	88%	\$6,403,636	\$911,734	\$750,701
50-99	1,686	–	\$1,491	\$2,514,610	–	75%	\$1,885,958	\$268,518	\$221,092
100-249	567	–	\$1,790	\$1,014,793	–	63%	\$639,320	\$91,025	\$74,948
250-499	100	–	\$2,386	\$238,634	–	50%	\$119,317	\$16,988	\$13,988
500+	59	–	\$3,580	\$211,191	–	38%	\$80,253	\$11,426	\$9,408
Subtotal	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Emergency Medical Services									
<25	4,126	–	\$468	\$1,932,507	–	93%	\$1,797,232	\$255,885	\$210,690
25-49	1,210	–	\$585	\$708,158	–	88%	\$623,179	\$88,727	\$73,056
50-99	615	–	\$585	\$360,301	–	75%	\$270,226	\$38,474	\$31,679
100-249	342	–	\$703	\$240,549	–	63%	\$151,546	\$21,577	\$17,766
250-499	108	–	\$937	\$101,571	–	50%	\$50,785	\$7,231	\$5,954
500+	187	–	\$1,405	\$262,754	–	38%	\$99,847	\$14,216	\$11,705
Subtotal	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Total									
<25	8,422	–	\$838	\$7,058,375	–	93%	\$6,564,289	\$934,607	\$769,535
25-49	6,089	–	\$1,311	\$7,985,017	–	88%	\$7,026,815	\$1,000,460	\$823,757
50-99	2,301	–	\$1,249	\$2,874,912	–	75%	\$2,156,184	\$306,992	\$252,771

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
100-249	909	–	\$1,380	\$1,255,342	–	63%	\$790,865	\$112,601	\$92,714
250-499	208	–	\$1,632	\$340,205	–	50%	\$170,103	\$24,219	\$19,941
500+	246	–	\$1,927	\$473,946	–	38%	\$180,099	\$25,642	\$21,113
Total	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Establish Health and Fitness Program -Written Plan									
Fire Departments and Firefighters									
<25	4,296	–	\$1,193	\$5,125,868	–	93%	\$4,767,057	\$678,722	\$558,845
25-49	4,879	–	\$1,491	\$7,276,859	–	88%	\$6,403,636	\$911,734	\$750,701
50-99	1,686	–	\$1,491	\$2,514,610	–	75%	\$1,885,958	\$268,518	\$221,092
100-249	567	–	\$1,790	\$1,014,793	–	63%	\$639,320	\$91,025	\$74,948
250-499	100	–	\$2,386	\$238,634	–	50%	\$119,317	\$16,988	\$13,988
500+	59	–	\$3,580	\$211,191	–	38%	\$80,253	\$11,426	\$9,408
Subtotal	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Emergency Medical Services									
<25	4,126	–	\$468	\$1,932,507	–	93%	\$1,797,232	\$255,885	\$210,690
25-49	1,210	–	\$585	\$708,158	–	88%	\$623,179	\$88,727	\$73,056
50-99	615	–	\$585	\$360,301	–	75%	\$270,226	\$38,474	\$31,679
100-249	342	–	\$703	\$240,549	–	63%	\$151,546	\$21,577	\$17,766
250-499	108	–	\$937	\$101,571	–	50%	\$50,785	\$7,231	\$5,954
500+	187	–	\$1,405	\$262,754	–	38%	\$99,847	\$14,216	\$11,705
Subtotal	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Total									
<25	8,422	–	\$838	\$7,058,375	–	93%	\$6,564,289	\$934,607	\$769,535
25-49	6,089	–	\$1,311	\$7,985,017	–	88%	\$7,026,815	\$1,000,460	\$823,757
50-99	2,301	–	\$1,249	\$2,874,912	–	75%	\$2,156,184	\$306,992	\$252,771
100-249	909	–	\$1,380	\$1,255,342	–	63%	\$790,865	\$112,601	\$92,714
250-499	208	–	\$1,632	\$340,205	–	50%	\$170,103	\$24,219	\$19,941
500+	246	–	\$1,927	\$473,946	–	38%	\$180,099	\$25,642	\$21,113
Total	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Implement Health and Fitness Program									
Fire Departments and Firefighters									
<25	4,296	–	\$1,193	–	\$5,125,868	93%	\$4,767,057	\$4,767,057	\$4,767,057

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
25-49	4,879	–	\$1,491	–	\$7,276,859	88%	\$6,403,636	\$6,403,636	\$6,403,636
50-99	1,686	–	\$1,491	–	\$2,514,610	75%	\$1,885,958	\$1,885,958	\$1,885,958
100-249	567	–	\$1,790	–	\$1,014,793	63%	\$639,320	\$639,320	\$639,320
250-499	100	–	\$2,386	–	\$238,634	50%	\$119,317	\$119,317	\$119,317
500+	59	–	\$3,580	–	\$211,191	38%	\$80,253	\$80,253	\$80,253
Subtotal	11,587	–	\$1,414	–	\$16,381,956	85%	\$13,895,540	\$13,895,540	\$13,895,540
Emergency Medical Services									
<25	4,126	–	\$468	–	\$1,932,507	93%	\$1,797,232	\$1,797,232	\$1,797,232
25-49	1,210	–	\$585	–	\$708,158	88%	\$623,179	\$623,179	\$623,179
50-99	615	–	\$585	–	\$360,301	75%	\$270,226	\$270,226	\$270,226
100-249	342	–	\$703	–	\$240,549	63%	\$151,546	\$151,546	\$151,546
250-499	108	–	\$937	–	\$101,571	50%	\$50,785	\$50,785	\$50,785
500+	187	–	\$1,405	–	\$262,754	38%	\$99,847	\$99,847	\$99,847
Subtotal	6,589	–	\$547	–	\$3,605,841	83%	\$2,992,815	\$2,992,815	\$2,992,815
Total									
<25	8,422	–	\$838	–	\$7,058,375	93%	\$6,564,289	\$6,564,289	\$6,564,289
25-49	6,089	–	\$1,311	–	\$7,985,017	88%	\$7,026,815	\$7,026,815	\$7,026,815
50-99	2,301	–	\$1,249	–	\$2,874,912	75%	\$2,156,184	\$2,156,184	\$2,156,184
100-249	909	–	\$1,380	–	\$1,255,342	63%	\$790,865	\$790,865	\$790,865
250-499	208	–	\$1,632	–	\$340,205	50%	\$170,103	\$170,103	\$170,103
500+	246	–	\$1,927	–	\$473,946	38%	\$180,099	\$180,099	\$180,099
Total	18,176	–	\$1,100	–	\$19,987,797	84%	\$16,888,355	\$16,888,355	\$16,888,355
Medical Surveillance - Initial									
Fire Departments and Firefighters									
<25	–	73,050	\$338	\$24,680,338	–	93%	\$22,952,714	\$3,267,950	\$2,690,758
25-49	–	154,364	\$338	\$52,152,549	–	88%	\$45,894,243	\$6,534,308	\$5,380,205
50-99	–	105,775	\$338	\$35,736,464	–	75%	\$26,802,348	\$3,816,051	\$3,142,053
100-249	–	77,711	\$338	\$26,254,892	–	63%	\$16,540,582	\$2,355,007	\$1,939,061
250-499	–	33,339	\$338	\$11,263,631	–	50%	\$5,631,815	\$801,844	\$660,221
500+	–	80,251	\$338	\$27,113,181	–	38%	\$10,303,009	\$1,466,917	\$1,207,827
Subtotal	–	524,489	\$338	\$177,201,055	–	72%	\$128,124,712	\$18,242,076	\$15,020,125

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
Emergency Medical Services									
<25	–	45,539	\$321	\$14,621,945	–	93%	\$13,598,409	\$1,936,108	\$1,594,148
25-49	–	47,732	\$321	\$15,326,291	–	88%	\$13,487,136	\$1,920,265	\$1,581,104
50-99	–	48,831	\$321	\$15,679,074	–	75%	\$11,759,306	\$1,674,261	\$1,378,549
100-249	–	57,243	\$321	\$18,379,854	–	63%	\$11,579,308	\$1,648,633	\$1,357,448
250-499	–	35,795	\$321	\$11,493,450	–	50%	\$5,746,725	\$818,204	\$673,691
500+	–	129,885	\$321	\$41,704,291	–	38%	\$15,847,631	\$2,256,346	\$1,857,826
Subtotal	–	365,025	\$321	\$117,204,905	–	61%	\$72,018,514	\$10,253,816	\$8,442,767
Total									
<25	–	118,589	\$331	\$39,302,283	–	93%	\$36,551,123	\$5,204,058	\$4,284,907
25-49	–	202,096	\$334	\$67,478,840	–	88%	\$59,381,379	\$8,454,572	\$6,961,309
50-99	–	154,606	\$333	\$51,415,539	–	75%	\$38,561,654	\$5,490,312	\$4,520,602
100-249	–	134,953	\$331	\$44,634,746	–	63%	\$28,119,890	\$4,003,640	\$3,296,509
250-499	–	69,134	\$329	\$22,757,081	–	50%	\$11,378,540	\$1,620,048	\$1,333,912
500+	–	210,136	\$327	\$68,817,472	–	38%	\$26,150,639	\$3,723,263	\$3,065,653
Total	–	889,514	\$331	\$294,405,960	–	68%	\$200,143,226	\$28,495,893	\$23,462,892
Medical Surveillance - Periodic									
Fire Departments and Firefighters									
<25	–	73,050	\$341	–	\$24,927,592	93%	\$23,182,661	\$23,182,661	\$23,182,661
25-49	–	154,364	\$341	–	\$52,675,028	88%	\$46,354,025	\$46,354,025	\$46,354,025
50-99	–	105,775	\$341	–	\$36,094,482	75%	\$27,070,862	\$27,070,862	\$27,070,862
100-249	–	77,711	\$341	–	\$26,517,921	63%	\$16,706,291	\$16,706,291	\$16,706,291
250-499	–	33,339	\$341	–	\$11,376,473	50%	\$5,688,237	\$5,688,237	\$5,688,237
500+	–	80,251	\$341	–	\$27,384,808	38%	\$10,406,227	\$10,406,227	\$10,406,227
Subtotal	–	524,489	\$341	–	\$178,976,306	72%	\$129,408,302	\$129,408,302	\$129,408,302
Emergency Medical Services									
<25	–	45,539	\$194	–	\$8,851,763	93%	\$8,232,139	\$8,232,139	\$8,232,139
25-49	–	47,732	\$194	–	\$9,278,156	88%	\$8,164,777	\$8,164,777	\$8,164,777
50-99	–	48,831	\$194	–	\$9,491,722	75%	\$7,118,792	\$7,118,792	\$7,118,792
100-249	–	57,243	\$194	–	\$11,126,707	63%	\$7,009,825	\$7,009,825	\$7,009,825
250-499	–	35,795	\$194	–	\$6,957,849	50%	\$3,478,925	\$3,478,925	\$3,478,925
500+	–	129,885	\$194	–	\$25,246,742	38%	\$9,593,762	\$9,593,762	\$9,593,762

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
Subtotal	–	365,025	\$194	–	\$70,952,939	61%	\$43,598,220	\$43,598,220	\$43,598,220
Total									
<25	–	118,589	\$285	–	\$33,779,355	93%	\$31,414,800	\$31,414,800	\$31,414,800
25-49	–	202,096	\$307	–	\$61,953,184	88%	\$54,518,802	\$54,518,802	\$54,518,802
50-99	–	154,606	\$295	–	\$45,586,205	75%	\$34,189,654	\$34,189,654	\$34,189,654
100-249	–	134,953	\$279	–	\$37,644,629	63%	\$23,716,116	\$23,716,116	\$23,716,116
250-499	–	69,134	\$265	–	\$18,334,322	50%	\$9,167,161	\$9,167,161	\$9,167,161
500+	–	210,136	\$250	–	\$52,631,551	38%	\$19,999,989	\$19,999,989	\$19,999,989
Total	–	889,514	\$281	–	\$249,929,246	69%	\$173,006,522	\$173,006,522	\$173,006,522
Fitness for Duty									
Fire Departments and Firefighters									
<25	–	73,050	\$68	–	\$4,984,373	93%	\$4,635,467	\$4,635,467	\$4,635,467
25-49	–	154,364	\$68	–	\$10,532,584	88%	\$9,268,674	\$9,268,674	\$9,268,674
50-99	–	105,775	\$68	–	\$7,217,237	75%	\$5,412,928	\$5,412,928	\$5,412,928
100-249	–	77,711	\$68	–	\$5,302,365	63%	\$3,340,490	\$3,340,490	\$3,340,490
250-499	–	33,339	\$68	–	\$2,274,772	50%	\$1,137,386	\$1,137,386	\$1,137,386
500+	–	80,251	\$68	–	\$5,475,703	38%	\$2,080,767	\$2,080,767	\$2,080,767
Subtotal	–	524,489	\$68	–	\$35,787,035	72%	\$25,875,712	\$25,875,712	\$25,875,712
Emergency Medical Services									
<25	–	45,539	\$7	–	\$312,045	93%	\$290,202	\$290,202	\$290,202
25-49	–	47,732	\$7	–	\$327,076	88%	\$287,827	\$287,827	\$287,827
50-99	–	48,831	\$7	–	\$334,605	75%	\$250,954	\$250,954	\$250,954
100-249	–	57,243	\$7	–	\$392,242	63%	\$247,113	\$247,113	\$247,113
250-499	–	35,795	\$7	–	\$245,280	50%	\$122,640	\$122,640	\$122,640
500+	–	129,885	\$7	–	\$890,006	38%	\$338,202	\$338,202	\$338,202
Subtotal	–	365,025	\$7	–	\$2,501,255	61%	\$1,536,938	\$1,536,938	\$1,536,938
Total									
<25	–	118,589	\$45	–	\$5,296,418	93%	\$4,925,668	\$4,925,668	\$4,925,668
25-49	–	202,096	\$54	–	\$10,859,661	88%	\$9,556,502	\$9,556,502	\$9,556,502
50-99	–	154,606	\$49	–	\$7,551,843	75%	\$5,663,882	\$5,663,882	\$5,663,882
100-249	–	134,953	\$42	–	\$5,694,608	63%	\$3,587,603	\$3,587,603	\$3,587,603
250-499	–	69,134	\$36	–	\$2,520,052	50%	\$1,260,026	\$1,260,026	\$1,260,026

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
500+	–	210,136	\$30	–	\$6,365,709	38%	\$2,418,969	\$2,418,969	\$2,418,969
Total	–	889,514	\$43	–	\$38,288,290	72%	\$27,412,650	\$27,412,650	\$27,412,650
Behavioral Health & Wellness Program									
Fire Departments and Firefighters									
<25	4,296	–	\$298	–	\$1,281,467	93%	\$1,191,764	\$1,191,764	\$1,191,764
25-49	4,879	–	\$298	–	\$1,455,372	88%	\$1,280,727	\$1,280,727	\$1,280,727
50-99	1,686	–	\$298	–	\$502,922	75%	\$377,192	\$377,192	\$377,192
100-249	567	–	\$298	–	\$169,132	63%	\$106,553	\$106,553	\$106,553
250-499	100	–	\$298	–	\$29,829	50%	\$14,915	\$14,915	\$14,915
500+	59	–	\$298	–	\$17,599	38%	\$6,688	\$6,688	\$6,688
Subtotal	11,587	–	\$298	–	\$3,456,322	86%	\$2,977,839	\$2,977,839	\$2,977,839
Emergency Medical Services									
<25	4,126	–	\$59	–	\$241,563	93%	\$224,654	\$224,654	\$224,654
25-49	1,210	–	\$59	–	\$70,816	88%	\$62,318	\$62,318	\$62,318
50-99	615	–	\$59	–	\$36,030	75%	\$27,023	\$27,023	\$27,023
100-249	342	–	\$117	–	\$40,091	63%	\$25,258	\$25,258	\$25,258
250-499	108	–	\$117	–	\$12,696	50%	\$6,348	\$6,348	\$6,348
500+	187	–	\$176	–	\$32,844	38%	\$12,481	\$12,481	\$12,481
Subtotal	6,589	–	\$66	–	\$434,041	82%	\$358,081	\$358,081	\$358,081
Total									
<25	8,422	–	\$181	–	\$1,523,030	93%	\$1,416,418	\$1,416,418	\$1,416,418
25-49	6,089	–	\$251	–	\$1,526,188	88%	\$1,343,045	\$1,343,045	\$1,343,045
50-99	2,301	–	\$234	–	\$538,952	75%	\$404,214	\$404,214	\$404,214
100-249	909	–	\$230	–	\$209,224	63%	\$131,811	\$131,811	\$131,811
250-499	208	–	\$204	–	\$42,526	50%	\$21,263	\$21,263	\$21,263
500+	246	–	\$205	–	\$50,444	38%	\$19,169	\$19,169	\$19,169
Total	18,176	–	\$214	–	\$3,890,363	86%	\$3,335,920	\$3,335,920	\$3,335,920
Total - Medical and Fitness Requirements									
Fire Departments and Firefighters									
<25	4,296	73,050	\$7,023	\$46,055,423	\$36,319,300	93%	\$76,608,492	\$39,875,197	\$38,798,112
25-49	4,879	154,364	\$8,515	\$83,101,811	\$71,939,844	88%	\$136,436,656	\$73,719,071	\$71,880,082
50-99	1,686	105,775	\$8,515	\$47,056,980	\$46,329,252	75%	\$70,039,674	\$39,771,831	\$38,884,324

Table VI-10. Total Cost Detail - Medical and Fitness Requirements

Size Class	ESOs	Responders	Unit Cost	Total One-Time Cost	Total Annual Cost	Non-Compliance Rate	Compliance-Adjusted Total Cost	Discounted Cost	
								7%	3%
100-249	567	77,711	\$10,006	\$31,241,285	\$33,004,212	63%	\$40,474,663	\$23,594,929	\$23,099,986
250-499	100	33,339	\$12,989	\$12,615,957	\$13,919,709	50%	\$13,267,833	\$7,857,969	\$7,699,342
500+	59	80,251	\$18,955	\$28,915,479	\$33,089,302	38%	\$23,561,817	\$14,138,362	\$13,862,050
Subtotal	11,587	524,489	\$8,127	\$248,986,935	\$234,601,618	75%	\$360,389,135	\$198,957,358	\$194,223,896
Emergency Medical Services									
<25	4,126	45,539	\$2,927	\$22,565,263	\$11,337,878	93%	\$31,529,921	\$13,532,118	\$13,004,390
25-49	1,210	47,732	\$3,513	\$18,382,488	\$10,384,207	88%	\$25,314,691	\$11,441,284	\$11,034,492
50-99	615	48,831	\$3,513	\$17,348,989	\$10,222,659	75%	\$20,678,736	\$9,519,574	\$9,192,367
100-249	342	57,243	\$4,157	\$19,610,155	\$11,799,590	63%	\$19,788,139	\$9,192,730	\$8,882,054
250-499	108	35,795	\$5,328	\$12,067,387	\$7,317,396	50%	\$9,692,392	\$4,517,760	\$4,366,031
500+	187	129,885	\$7,728	\$43,363,645	\$26,432,347	38%	\$26,522,477	\$12,390,415	\$11,976,038
Subtotal	6,589	365,025	\$3,329	\$133,337,926	\$77,494,077	63%	\$133,526,356	\$60,593,880	\$58,455,372
Total									
<25	8,422	118,589	\$579	\$68,620,686	\$47,657,178	93%	\$108,138,413	\$53,407,314	\$51,802,503
25-49	6,089	202,096	\$502	\$101,484,299	\$82,324,050	88%	\$161,751,348	\$85,160,356	\$82,914,573
50-99	2,301	154,606	\$417	\$64,405,969	\$56,551,911	75%	\$90,718,410	\$49,291,404	\$48,076,692
100-249	909	134,953	\$377	\$50,851,440	\$44,803,802	63%	\$60,262,802	\$32,787,659	\$31,982,039
250-499	208	69,134	\$357	\$24,683,343	\$21,237,105	50%	\$22,960,224	\$12,375,729	\$12,065,373
500+	246	210,136	\$344	\$72,279,124	\$59,521,649	38%	\$50,084,294	\$26,528,777	\$25,838,088
Total	18,176	889,514	\$11,456	\$382,324,861	\$312,095,695	71%	\$493,915,491	\$259,551,238	\$252,679,267

Source: OSHA.

Note: Figures may not add to totals due to rounding. Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Table VI-11. Total Cost Summary - Medical and Fitness Requirements

	ESOs	Respon ders	Unit Cost	Total One- Time Cost	Total Annual Cost	Non- Compliance Rate	Compliance- Adjusted Total Cost	Discounted Cost	
								7%	3%
Fire Departments and Firefighters									
Minimum Medical Requirement - Statement	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Confidential Health Database	–	524,489	\$12	\$6,258,056	–	72%	\$4,524,869	\$644,240	\$530,453
Physical Performance Requirement - Statement	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Develop Physical Performance Rehab Program	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Est. Health and Fitness Program -Written Plan	11,587	–	\$1,414	\$16,381,956	–	85%	\$13,895,540	\$1,978,412	\$1,628,981
Implement Health and Fitness Program	11,587	–	\$1,414	–	\$16,381,956	85%	\$13,895,540	\$13,895,540	\$13,895,540
Medical Surveillance - Initial	–	524,489	\$338	\$177,201,055	–	72%	\$128,124,712	\$18,242,076	\$15,020,125
Medical Surveillance - Periodic	–	524,489	\$341	–	\$178,976,306	72%	\$129,408,302	\$129,408,302	\$129,408,302
Fitness for Duty	–	524,489	\$68	–	\$35,787,035	72%	\$25,875,712	\$25,875,712	\$25,875,712
Behavioral Health & Wellness Program	11,587	–	\$298	–	\$3,456,322	86%	\$2,977,839	\$2,977,839	\$2,977,839
Subtotal	11,587	524,489	\$8,127	\$248,986,935	\$234,601,618	75%	\$360,389,135	\$198,957,358	\$194,223,896
Emergency Medical Services									
Minimum Medical Requirement - Statement	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Confidential Health Database	–	365,025	\$5	\$1,709,659	–	61%	\$1,050,528	\$149,572	\$123,154
Physical Performance Requirement - Statement	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Develop Physical Performance Rehab Program	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Est. Health and Fitness Program -Written Plan	6,589	–	\$547	\$3,605,841	–	83%	\$2,992,815	\$426,109	\$350,849
Implement Health and Fitness Program	6,589	–	\$547	–	\$3,605,841	83%	\$2,992,815	\$2,992,815	\$2,992,815
Medical Surveillance - Initial	–	365,025	\$321	\$117,204,905	–	61%	\$72,018,514	\$10,253,816	\$8,442,767
Medical Surveillance - Periodic	–	365,025	\$194	–	\$70,952,939	61%	\$43,598,220	\$43,598,220	\$43,598,220
Fitness for Duty	–	365,025	\$7	–	\$2,501,255	61%	\$1,536,938	\$1,536,938	\$1,536,938
Behavioral Health & Wellness Program	6,589	–	\$66	–	\$434,041	82%	\$358,081	\$358,081	\$358,081
Subtotal	6,589	365,025	\$3,329	\$133,337,926	\$77,494,077	63%	\$133,526,356	\$60,593,880	\$58,455,372

Table VI-11. Total Cost Summary - Medical and Fitness Requirements

	ESOs	Respon ders	Unit Cost	Total One- Time Cost	Total Annual Cost	Non- Compliance Rate	Compliance- Adjusted Total Cost	Discounted Cost	
								7%	3%
Total									
Minimum Medical Requirement - Statement	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Confidential Health Database	–	889,514	\$9	\$7,967,714	–	70%	\$5,575,397	\$793,811	\$653,607
Physical Performance Requirement - Statement	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Develop Physical Performance Rehab Program	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Est. Health and Fitness Program -Written Plan	18,176	–	\$1,100	\$19,987,797	–	84%	\$16,888,355	\$2,404,522	\$1,979,830
Implement Health and Fitness Program	18,176	–	\$1,100	–	\$19,987,797	84%	\$16,888,355	\$16,888,355	\$16,888,355
Medical Surveillance - Initial	–	889,514	\$331	\$294,405,960	–	68%	\$200,143,226	\$28,495,893	\$23,462,892
Medical Surveillance - Periodic	–	889,514	\$281	–	\$249,929,246	69%	\$173,006,522	\$173,006,522	\$173,006,522
Fitness for Duty	–	889,514	\$43	–	\$38,288,290	72%	\$27,412,650	\$27,412,650	\$27,412,650
Behavioral Health & Wellness Program	18,176	–	\$214	–	\$3,890,363	86%	\$3,335,920	\$3,335,920	\$3,335,920
Total	18,176	889,514	\$6,376	\$382,324,861	\$312,095,695	71%	\$493,915,491	\$259,551,238	\$252,679,267

Source: OSHA.

Note: Figures may not add to totals due to rounding. Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

Total Costs of the Draft Standard

OSHA estimates the total cost of the draft standard by multiplying the industry profile numbers shown in Section V by the unit costs shown in Table VI-3 (for fire departments) and Table VI-6 (for emergency medical services).

The only exception to the approach of multiplying the profile numbers by unit costs to obtain total costs is an adjustment made to initial training: because this training would only apply to new hires, the unit cost is only multiplied by a percentage of the number of responders. Based on the hiring rates for similar jobs with EMS providers reported in Patterson et al., 2010 and BLS job growth projections, OSHA estimated that the annual hire rate for fire departments is 10 percent (see <https://www.bls.gov/ooh/Protective-Service/Firefighters.htm>). For EMS providers, the annual hire rate is estimated to be 10.7 percent (Patterson et al., 2010).

Table VI-12 shows the total costs for ESOs of all sizes. Table VI-13 shows the costs for ESOs considered small by either the RFA definition (for public ESOs) or SBA definition (for private ESOs). Table VI-14 shows the costs for very small ESOs, those with fewer than 20 employees (regardless of ownership).

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Fire Departments and Firefighters						
Career Fire ESOs						
ERP	\$2,191,920	\$312,080	\$256,960	\$659,509	\$971,589	\$916,469
Establishment of Service(s) Capability	\$28,308,290	\$4,030,464	\$3,318,595	\$0	\$4,030,464	\$3,318,595
Org RMP	\$6,342,623	\$903,047	\$743,549	\$2,697,609	\$3,600,656	\$3,441,158
Medical/Fitness Requirements	\$67,874,043	\$9,663,737	\$7,956,908	\$64,160,977	\$73,824,714	\$72,117,886
Training	\$444,149	\$63,237	\$52,068	\$35,468,338	\$35,531,575	\$35,520,406
Facility Preparedness & PPE	\$3,507,801	\$499,432	\$411,221	\$20,990,955	\$21,490,387	\$21,402,177
Vehicle Preparedness & Operations	\$1,318,357	\$187,704	\$154,552	\$6,432,684	\$6,620,388	\$6,587,235
Pre-Incident Planning	\$12,543,104	\$1,785,856	\$1,470,434	\$0	\$1,785,856	\$1,470,434
SOPs	\$12,543,104	\$1,785,856	\$1,470,434	\$0	\$1,785,856	\$1,470,434
Incident Management System Development	\$3,216,342	\$457,935	\$377,053	\$0	\$457,935	\$377,053
Emergency Incident Operations	\$2,223,263	\$316,543	\$260,634	\$0	\$316,543	\$260,634
Post Incident Analysis	\$0	\$0	\$0	\$5,759,025	\$5,759,025	\$5,759,025
ERP Program Evaluation	\$0	\$0	\$0	\$13,045,135	\$13,045,135	\$13,045,135
Total	\$140,512,994	\$20,005,889	\$16,472,410	\$149,214,232	\$169,220,121	\$165,686,641
Volunteer Fire ESOs						
ERP	\$3,420,783	\$487,043	\$401,020	\$1,026,701	\$1,513,743	\$1,427,721
Establishment of Service(s) Capability	\$44,196,357	\$6,292,567	\$5,181,161	\$0	\$6,292,567	\$5,181,161
Org RMP	\$9,911,649	\$1,411,196	\$1,161,948	\$4,199,252	\$5,610,448	\$5,361,199
Medical/Fitness Requirements	\$81,258,014	\$11,569,313	\$9,525,918	\$71,397,260	\$82,966,574	\$80,923,179
Training	\$686,134	\$97,690	\$80,436	\$30,317,815	\$30,415,505	\$30,398,251
Facility Preparedness & PPE	\$5,454,742	\$776,633	\$639,462	\$32,763,089	\$33,539,721	\$33,402,551
Vehicle Preparedness & Operations	\$2,050,111	\$291,890	\$240,336	\$10,031,667	\$10,323,557	\$10,272,003
Pre-Incident Planning	\$19,053,230	\$2,712,751	\$2,233,620	\$0	\$2,712,751	\$2,233,620
SOPs	\$19,053,230	\$2,712,751	\$2,233,620	\$0	\$2,712,751	\$2,233,620
Incident Management System Development	\$5,015,833	\$714,142	\$588,009	\$0	\$714,142	\$588,009
Emergency Incident Operations	\$3,471,639	\$494,283	\$406,982	\$0	\$494,283	\$406,982
Post Incident Analysis	\$0	\$0	\$0	\$8,691,544	\$8,691,544	\$8,691,544

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
ERP Program Evaluation	\$0	\$0	\$0	\$19,594,678	\$19,594,678	\$19,594,678
Total	\$193,571,723	\$27,560,259	\$22,692,511	\$178,022,006	\$205,582,264	\$200,714,517
Combination Fire ESOs						
ERP	\$1,302,652	\$185,468	\$152,711	\$393,952	\$579,421	\$546,663
Establishment of Service(s) Capability	\$16,821,750	\$2,395,039	\$1,972,022	\$0	\$2,395,039	\$1,972,022
Org RMP	\$3,760,079	\$535,351	\$440,796	\$1,607,251	\$2,142,601	\$2,048,047
Medical/Fitness Requirements	\$39,099,686	\$5,566,916	\$4,583,676	\$36,599,155	\$42,166,071	\$41,182,831
Training	\$268,398	\$38,214	\$31,464	\$20,136,577	\$20,174,791	\$20,168,042
Facility Preparedness & PPE	\$2,099,375	\$298,904	\$246,111	\$12,487,890	\$12,786,793	\$12,734,000
Vehicle Preparedness & Operations	\$788,955	\$112,329	\$92,490	\$3,828,699	\$3,941,028	\$3,921,188
Pre-Incident Planning	\$7,647,846	\$1,088,881	\$896,561	\$0	\$1,088,881	\$896,561
SOPs	\$7,647,846	\$1,088,881	\$896,561	\$0	\$1,088,881	\$896,561
Incident Management System Development	\$1,914,349	\$272,560	\$224,420	\$0	\$272,560	\$224,420
Emergency Incident Operations	\$1,320,651	\$188,031	\$154,821	\$0	\$188,031	\$154,821
Post Incident Analysis	\$0	\$0	\$0	\$3,526,122	\$3,526,122	\$3,526,122
ERP Program Evaluation	\$0	\$0	\$0	\$7,972,237	\$7,972,237	\$7,972,237
Total	\$82,671,588	\$11,770,574	\$9,691,632	\$86,551,883	\$98,322,457	\$96,243,515
Fire Total						
ERP	\$6,915,355	\$984,591	\$810,691	\$2,080,162	\$3,064,753	\$2,890,853
Establishment of Service(s) Capability	\$89,326,398	\$12,718,069	\$10,471,779	\$0	\$12,718,069	\$10,471,779
Org RMP	\$20,014,351	\$2,849,593	\$2,346,293	\$8,504,111	\$11,353,705	\$10,850,404
Medical/Fitness Requirements	\$188,231,742	\$26,799,965	\$22,066,503	\$172,157,393	\$198,957,358	\$194,223,896
Training	\$1,398,681	\$199,141	\$163,968	\$85,922,730	\$86,121,871	\$86,086,698
Facility Preparedness & PPE	\$11,061,917	\$1,574,968	\$1,296,794	\$66,241,934	\$67,816,902	\$67,538,728
Vehicle Preparedness & Operations	\$4,157,424	\$591,924	\$487,377	\$20,293,049	\$20,884,973	\$20,780,426
Pre-Incident Planning	\$39,244,180	\$5,587,488	\$4,600,615	\$0	\$5,587,488	\$4,600,615
SOPs	\$39,244,180	\$5,587,488	\$4,600,615	\$0	\$5,587,488	\$4,600,615
Incident Management System Development	\$10,146,525	\$1,444,637	\$1,189,482	\$0	\$1,444,637	\$1,189,482
Emergency Incident Operations	\$7,015,553	\$998,857	\$822,437	\$0	\$998,857	\$822,437

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Post Incident Analysis	\$0	\$0	\$0	\$17,976,690	\$17,976,690	\$17,976,690
ERP Program Evaluation	\$0	\$0	\$0	\$40,612,050	\$40,612,050	\$40,612,050
Total	\$416,756,305	\$59,336,722	\$48,856,553	\$413,788,121	\$473,124,843	\$462,644,674
Ambulance ESOs and EMTs						
Career Ambulance ESOs						
ERP	\$581,593	\$82,806	\$68,180	\$229,254	\$312,060	\$297,435
Establishment of Service(s) Capability	\$7,521,255	\$1,070,857	\$881,721	\$0	\$1,070,857	\$881,721
Org RMP	\$1,695,008	\$241,331	\$198,707	\$714,411	\$955,742	\$913,118
Medical/Fitness Requirements	\$32,633,779	\$4,646,316	\$3,825,674	\$18,600,190	\$23,246,506	\$22,425,865
Training	\$53,475	\$7,614	\$6,269	\$36,874,137	\$36,881,750	\$36,880,406
Facility Preparedness & PPE	\$159,968	\$22,776	\$18,753	\$5,220,908	\$5,243,684	\$5,239,661
Vehicle Preparedness & Operations	\$508,597	\$72,413	\$59,623	\$1,709,046	\$1,781,459	\$1,768,669
Pre-Incident Planning	\$3,254,595	\$463,381	\$381,538	\$0	\$463,381	\$381,538
SOPs	\$3,254,595	\$463,381	\$381,538	\$0	\$463,381	\$381,538
Incident Management System Development	\$854,523	\$121,665	\$100,176	\$0	\$121,665	\$100,176
Emergency Incident Operations	\$590,263	\$84,040	\$69,197	\$0	\$84,040	\$69,197
Post Incident Analysis	\$0	\$0	\$0	\$1,489,192	\$1,489,192	\$1,489,192
ERP Program Evaluation	\$0	\$0	\$0	\$3,486,108	\$3,486,108	\$3,486,108
Total	\$51,107,652	\$7,276,580	\$5,991,376	\$68,323,247	\$75,599,827	\$74,314,623
Volunteer Ambulance ESOs						
ERP	\$315,900	\$44,977	\$37,033	\$124,516	\$169,493	\$161,549
Establishment of Service(s) Capability	\$4,085,027	\$581,616	\$478,890	\$0	\$581,616	\$478,890
Org RMP	\$920,654	\$131,080	\$107,929	\$388,066	\$519,146	\$495,994
Medical/Fitness Requirements	\$18,055,175	\$2,570,651	\$2,116,617	\$10,306,716	\$12,877,367	\$12,423,334
Training	\$29,049	\$4,136	\$3,405	\$20,564,151	\$20,568,287	\$20,567,557
Facility Preparedness & PPE	\$86,856	\$12,366	\$10,182	\$2,835,657	\$2,848,024	\$2,845,840
Vehicle Preparedness & Operations	\$276,241	\$39,331	\$32,384	\$928,237	\$967,567	\$960,621
Pre-Incident Planning	\$1,770,192	\$252,035	\$207,520	\$0	\$252,035	\$207,520
SOPs	\$1,770,192	\$252,035	\$207,520	\$0	\$252,035	\$207,520

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Incident Management System Development	\$464,118	\$66,080	\$54,409	\$0	\$66,080	\$54,409
Emergency Incident Operations	\$320,598	\$45,646	\$37,584	\$0	\$45,646	\$37,584
Post Incident Analysis	\$0	\$0	\$0	\$810,334	\$810,334	\$810,334
ERP Program Evaluation	\$0	\$0	\$0	\$1,898,077	\$1,898,077	\$1,898,077
Total	\$28,094,003	\$3,999,954	\$3,293,474	\$37,855,754	\$41,855,708	\$41,149,229
Combination Ambulance ESOs						
ERP	\$612,203	\$87,164	\$71,769	\$241,321	\$328,484	\$313,089
Establishment of Service(s) Capability	\$7,917,110	\$1,127,218	\$928,127	\$0	\$1,127,218	\$928,127
Org RMP	\$1,784,219	\$254,033	\$209,165	\$752,012	\$1,006,044	\$961,177
Medical/Fitness Requirements	\$34,351,347	\$4,890,859	\$4,027,026	\$19,579,148	\$24,470,007	\$23,606,174
Training	\$56,289	\$8,014	\$6,599	\$38,814,881	\$38,822,895	\$38,821,480
Facility Preparedness & PPE	\$168,388	\$23,975	\$19,740	\$5,495,693	\$5,519,667	\$5,515,433
Vehicle Preparedness & Operations	\$535,365	\$76,224	\$62,761	\$1,798,996	\$1,875,220	\$1,861,757
Pre-Incident Planning	\$3,425,890	\$487,770	\$401,619	\$0	\$487,770	\$401,619
SOPs	\$3,425,890	\$487,770	\$401,619	\$0	\$487,770	\$401,619
Incident Management System Development	\$899,498	\$128,068	\$105,449	\$0	\$128,068	\$105,449
Emergency Incident Operations	\$621,329	\$88,463	\$72,839	\$0	\$88,463	\$72,839
Post Incident Analysis	\$0	\$0	\$0	\$1,567,571	\$1,567,571	\$1,567,571
ERP Program Evaluation	\$0	\$0	\$0	\$3,669,588	\$3,669,588	\$3,669,588
Total	\$53,797,529	\$7,659,558	\$6,306,712	\$71,919,207	\$79,578,765	\$78,225,919
Ambulance Total						
ERP	\$1,509,696	\$214,947	\$176,982	\$595,091	\$810,038	\$772,074
Establishment of Service(s) Capability	\$19,523,392	\$2,779,692	\$2,288,737	\$0	\$2,779,692	\$2,288,737
Org RMP	\$4,399,882	\$626,444	\$515,800	\$1,854,489	\$2,480,933	\$2,370,289
Medical/Fitness Requirements	\$85,040,302	\$12,107,826	\$9,969,318	\$48,486,054	\$60,593,880	\$58,455,372
Training	\$138,813	\$19,764	\$16,273	\$96,253,169	\$96,272,932	\$96,269,442
Facility Preparedness & PPE	\$415,213	\$59,117	\$48,676	\$13,552,258	\$13,611,375	\$13,600,934
Vehicle Preparedness & Operations	\$1,320,204	\$187,967	\$154,768	\$4,436,279	\$4,624,246	\$4,591,047
Pre-Incident Planning	\$8,450,677	\$1,203,186	\$990,677	\$0	\$1,203,186	\$990,677

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
SOPs	\$8,450,677	\$1,203,186	\$990,677	\$0	\$1,203,186	\$990,677
Incident Management System Development	\$2,218,139	\$315,813	\$260,034	\$0	\$315,813	\$260,034
Emergency Incident Operations	\$1,532,190	\$218,149	\$179,619	\$0	\$218,149	\$179,619
Post Incident Analysis	\$0	\$0	\$0	\$3,867,096	\$3,867,096	\$3,867,096
ERP Program Evaluation	\$0	\$0	\$0	\$9,053,773	\$9,053,773	\$9,053,773
Total	\$132,999,184	\$18,936,092	\$15,591,562	\$178,098,209	\$197,034,300	\$193,689,770
Total Fire and Ambulance						
Career Fire and Ambulance ESOs						
ERP	\$2,773,513	\$394,886	\$325,140	\$888,763	\$1,283,649	\$1,213,904
Establishment of Service(s) Capability	\$35,829,545	\$5,101,321	\$4,200,316	\$0	\$5,101,321	\$4,200,316
Org RMP	\$8,037,631	\$1,144,378	\$942,256	\$3,412,020	\$4,556,398	\$4,354,275
Medical/Fitness Requirements	\$100,507,822	\$14,310,053	\$11,782,583	\$82,761,167	\$97,071,220	\$94,543,750
Training	\$497,624	\$70,851	\$58,337	\$72,342,475	\$72,413,325	\$72,400,812
Facility Preparedness & PPE	\$3,667,769	\$522,208	\$429,974	\$26,211,864	\$26,734,072	\$26,641,838
Vehicle Preparedness & Operations	\$1,826,954	\$260,117	\$214,175	\$8,141,730	\$8,401,847	\$8,355,904
Pre-Incident Planning	\$15,797,699	\$2,249,237	\$1,851,972	\$0	\$2,249,237	\$1,851,972
SOPs	\$15,797,699	\$2,249,237	\$1,851,972	\$0	\$2,249,237	\$1,851,972
Incident Management System Development	\$4,070,865	\$579,600	\$477,230	\$0	\$579,600	\$477,230
Emergency Incident Operations	\$2,813,526	\$400,583	\$329,831	\$0	\$400,583	\$329,831
Post Incident Analysis	\$0	\$0	\$0	\$7,248,217	\$7,248,217	\$7,248,217
ERP Program Evaluation	\$0	\$0	\$0	\$16,531,243	\$16,531,243	\$16,531,243
Total	\$191,620,647	\$27,282,469	\$22,463,786	\$217,537,479	\$244,819,948	\$240,001,264
Volunteer Fire and Ambulance ESOs						
ERP	\$3,736,683	\$532,020	\$438,053	\$1,151,217	\$1,683,237	\$1,589,270
Establishment of Service(s) Capability	\$48,281,385	\$6,874,183	\$5,660,051	\$0	\$6,874,183	\$5,660,051
Org RMP	\$10,832,303	\$1,542,276	\$1,269,876	\$4,587,317	\$6,129,594	\$5,857,194
Medical/Fitness Requirements	\$99,313,189	\$14,139,964	\$11,642,536	\$81,703,977	\$95,843,941	\$93,346,512
Training	\$715,183	\$101,826	\$83,841	\$50,881,966	\$50,983,792	\$50,965,807
Facility Preparedness & PPE	\$5,541,598	\$788,999	\$649,644	\$35,598,746	\$36,387,745	\$36,248,391

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Vehicle Preparedness & Operations	\$2,326,353	\$331,220	\$272,720	\$10,959,904	\$11,291,124	\$11,232,623
Pre-Incident Planning	\$20,823,422	\$2,964,787	\$2,441,140	\$0	\$2,964,787	\$2,441,140
SOPs	\$20,823,422	\$2,964,787	\$2,441,140	\$0	\$2,964,787	\$2,441,140
Incident Management System Development	\$5,479,952	\$780,222	\$642,418	\$0	\$780,222	\$642,418
Emergency Incident Operations	\$3,792,237	\$539,929	\$444,566	\$0	\$539,929	\$444,566
Post Incident Analysis	\$0	\$0	\$0	\$9,501,877	\$9,501,877	\$9,501,877
ERP Program Evaluation	\$0	\$0	\$0	\$21,492,755	\$21,492,755	\$21,492,755
Total	\$221,665,726	\$31,560,213	\$25,985,985	\$215,877,760	\$247,437,973	\$241,863,745
Combination Fire and Ambulance ESOs						
ERP	\$1,914,855	\$272,632	\$224,479	\$635,273	\$907,905	\$859,752
Establishment of Service(s) Capability	\$24,738,861	\$3,522,257	\$2,900,149	\$0	\$3,522,257	\$2,900,149
Org RMP	\$5,544,299	\$789,383	\$649,961	\$2,359,262	\$3,148,646	\$3,009,223
Medical/Fitness Requirements	\$73,451,032	\$10,457,775	\$8,610,702	\$56,178,303	\$66,636,078	\$64,789,005
Training	\$324,688	\$46,228	\$38,063	\$58,951,458	\$58,997,686	\$58,989,521
Facility Preparedness & PPE	\$2,267,762	\$322,878	\$265,851	\$17,983,583	\$18,306,461	\$18,249,433
Vehicle Preparedness & Operations	\$1,324,321	\$188,553	\$155,251	\$5,627,695	\$5,816,248	\$5,782,945
Pre-Incident Planning	\$11,073,736	\$1,576,651	\$1,298,180	\$0	\$1,576,651	\$1,298,180
SOPs	\$11,073,736	\$1,576,651	\$1,298,180	\$0	\$1,576,651	\$1,298,180
Incident Management System Development	\$2,813,847	\$400,629	\$329,869	\$0	\$400,629	\$329,869
Emergency Incident Operations	\$1,941,980	\$276,494	\$227,659	\$0	\$276,494	\$227,659
Post Incident Analysis	\$0	\$0	\$0	\$5,093,693	\$5,093,693	\$5,093,693
ERP Program Evaluation	\$0	\$0	\$0	\$11,641,824	\$11,641,824	\$11,641,824
Total	\$136,469,117	\$19,430,132	\$15,998,344	\$158,471,091	\$177,901,223	\$174,469,434
Total Fire and Ambulance ESOs						
ERP	\$8,425,050	\$1,199,538	\$987,673	\$2,675,253	\$3,874,791	\$3,662,926
Establishment of Service(s) Capability	\$108,849,790	\$15,497,761	\$12,760,516	\$0	\$15,497,761	\$12,760,516
Org RMP	\$24,414,233	\$3,476,038	\$2,862,093	\$10,358,600	\$13,834,637	\$13,220,693
Medical/Fitness Requirements	\$273,272,044	\$38,907,791	\$32,035,820	\$220,643,447	\$259,551,238	\$252,679,267
Training	\$1,537,495	\$218,905	\$180,241	\$182,175,899	\$182,394,804	\$182,356,140

Table VI-12. Total Cost Summary by Provision - All ESOs

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Facility Preparedness & PPE	\$11,477,130	\$1,634,085	\$1,345,470	\$79,794,192	\$81,428,278	\$81,139,662
Vehicle Preparedness & Operations	\$5,477,628	\$779,891	\$642,145	\$24,729,328	\$25,509,219	\$25,371,473
Pre-Incident Planning	\$47,694,857	\$6,790,675	\$5,591,292	\$0	\$6,790,675	\$5,591,292
SOPs	\$47,694,857	\$6,790,675	\$5,591,292	\$0	\$6,790,675	\$5,591,292
Incident Management System Development	\$12,364,664	\$1,760,450	\$1,449,516	\$0	\$1,760,450	\$1,449,516
Emergency Incident Operations	\$8,547,743	\$1,217,006	\$1,002,056	\$0	\$1,217,006	\$1,002,056
Post Incident Analysis	\$0	\$0	\$0	\$21,843,787	\$21,843,787	\$21,843,787
ERP Program Evaluation	\$0	\$0	\$0	\$49,665,823	\$49,665,823	\$49,665,823
Total	\$549,755,490	\$78,272,814	\$64,448,115	\$591,886,330	\$670,159,143	\$656,334,444

Source: OSHA.

Note: Figures in rows may not add to totals due to rounding.

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Fire Departments and Firefighters						
Career Fire ESOs						
ERP	\$0	\$0	\$0	\$585,301	\$585,301	\$585,301
Establishment of Service(s) Capability	\$25,086,116	\$3,571,699	\$2,940,858	\$0	\$3,571,699	\$2,940,858
Org RMP	\$5,613,690	\$799,263	\$658,096	\$2,381,570	\$3,180,833	\$3,039,666
Medical/Fitness Requirements	\$46,015,175	\$6,551,526	\$5,394,382	\$34,393,329	\$40,944,855	\$39,787,711
Training	\$394,334	\$56,144	\$46,228	\$16,868,020	\$16,924,164	\$16,914,248
Facility Preparedness & PPE	\$3,112,742	\$443,184	\$364,908	\$16,897,820	\$17,341,004	\$17,262,728
Vehicle Preparedness & Operations	\$1,168,569	\$166,378	\$136,992	\$5,693,281	\$5,859,659	\$5,830,273
Pre-Incident Planning	\$10,855,123	\$1,545,525	\$1,272,552	\$0	\$1,545,525	\$1,272,552
SOPs	\$10,855,123	\$1,545,525	\$1,272,552	\$0	\$1,545,525	\$1,272,552
Incident Management System Development	\$2,846,640	\$405,298	\$333,713	\$0	\$405,298	\$333,713
Emergency Incident Operations	\$1,970,485	\$280,553	\$231,001	\$0	\$280,553	\$231,001
Post Incident Analysis	\$0	\$0	\$0	\$4,946,474	\$4,946,474	\$4,946,474
ERP Program Evaluation	\$0	\$0	\$0	\$11,106,479	\$11,106,479	\$11,106,479
Total	\$107,917,997	\$15,365,095	\$12,651,282	\$92,872,275	\$108,237,370	\$105,523,557
Volunteer Fire ESOs						
ERP	\$0	\$0	\$0	\$979,921	\$979,921	\$979,921
Establishment of Service(s) Capability	\$42,165,956	\$6,003,484	\$4,943,136	\$0	\$6,003,484	\$4,943,136
Org RMP	\$9,452,691	\$1,345,851	\$1,108,144	\$3,998,561	\$5,344,411	\$5,106,705
Medical/Fitness Requirements	\$71,826,843	\$10,226,527	\$8,420,297	\$52,546,408	\$62,772,935	\$60,966,706
Training	\$655,007	\$93,258	\$76,787	\$24,944,371	\$25,037,630	\$25,021,158
Facility Preparedness & PPE	\$5,205,565	\$741,155	\$610,251	\$28,370,498	\$29,111,653	\$28,980,749
Vehicle Preparedness & Operations	\$1,955,247	\$278,383	\$229,215	\$9,563,797	\$9,842,180	\$9,793,011
Pre-Incident Planning	\$17,992,650	\$2,561,749	\$2,109,288	\$0	\$2,561,749	\$2,109,288
SOPs	\$17,992,650	\$2,561,749	\$2,109,288	\$0	\$2,561,749	\$2,109,288

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Incident Management System Development	\$4,781,898	\$680,835	\$560,584	\$0	\$680,835	\$560,584
Emergency Incident Operations	\$3,312,376	\$471,608	\$388,311	\$0	\$471,608	\$388,311
Post Incident Analysis	\$0	\$0	\$0	\$8,181,459	\$8,181,459	\$8,181,459
ERP Program Evaluation	\$0	\$0	\$0	\$18,404,856	\$18,404,856	\$18,404,856
Total	\$175,340,883	\$24,964,597	\$20,555,301	\$146,989,871	\$171,954,468	\$167,545,172
Combination Fire ESOs						
ERP	\$0	\$0	\$0	\$336,725	\$336,725	\$336,725
Establishment of Service(s) Capability	\$14,336,667	\$2,041,219	\$1,680,695	\$0	\$2,041,219	\$1,680,695
Org RMP	\$3,197,907	\$455,310	\$374,892	\$1,362,937	\$1,818,247	\$1,737,829
Medical/Fitness Requirements	\$25,320,573	\$3,605,080	\$2,968,344	\$18,633,762	\$22,238,842	\$21,602,106
Training	\$230,097	\$32,761	\$26,974	\$9,330,115	\$9,362,876	\$9,357,090
Facility Preparedness & PPE	\$1,794,698	\$255,525	\$210,393	\$9,676,165	\$9,931,689	\$9,886,558
Vehicle Preparedness & Operations	\$673,322	\$95,866	\$78,934	\$3,257,873	\$3,353,739	\$3,336,807
Pre-Incident Planning	\$6,346,006	\$903,528	\$743,945	\$0	\$903,528	\$743,945
SOPs	\$6,346,006	\$903,528	\$743,945	\$0	\$903,528	\$743,945
Incident Management System Development	\$1,628,937	\$231,924	\$190,961	\$0	\$231,924	\$190,961
Emergency Incident Operations	\$1,125,694	\$160,273	\$131,966	\$0	\$160,273	\$131,966
Post Incident Analysis	\$0	\$0	\$0	\$2,899,259	\$2,899,259	\$2,899,259
ERP Program Evaluation	\$0	\$0	\$0	\$6,484,071	\$6,484,071	\$6,484,071
Total	\$60,999,906	\$8,685,014	\$7,151,050	\$51,980,907	\$60,665,921	\$59,131,957
Fire Total						
ERP	\$0	\$0	\$0	\$1,901,947	\$1,901,947	\$1,901,947
Establishment of Service(s) Capability	\$81,588,739	\$11,616,401	\$9,564,689	\$0	\$11,616,401	\$9,564,689
Org RMP	\$18,264,289	\$2,600,424	\$2,141,132	\$7,743,068	\$10,343,492	\$9,884,200
Medical/Fitness Requirements	\$143,162,591	\$20,383,132	\$16,783,023	\$105,573,500	\$125,956,632	\$122,356,523
Training	\$1,279,439	\$182,163	\$149,989	\$51,142,506	\$51,324,670	\$51,292,496
Facility Preparedness & PPE	\$10,113,004	\$1,439,864	\$1,185,553	\$54,944,483	\$56,384,347	\$56,130,035

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Vehicle Preparedness & Operations	\$3,797,138	\$540,627	\$445,140	\$18,514,951	\$19,055,578	\$18,960,091
Pre-Incident Planning	\$35,193,779	\$5,010,802	\$4,125,785	\$0	\$5,010,802	\$4,125,785
SOPs	\$35,193,779	\$5,010,802	\$4,125,785	\$0	\$5,010,802	\$4,125,785
Incident Management System Development	\$9,257,475	\$1,318,056	\$1,085,259	\$0	\$1,318,056	\$1,085,259
Emergency Incident Operations	\$6,408,554	\$912,434	\$751,278	\$0	\$912,434	\$751,278
Post Incident Analysis	\$0	\$0	\$0	\$16,027,193	\$16,027,193	\$16,027,193
ERP Program Evaluation	\$0	\$0	\$0	\$35,995,406	\$35,995,406	\$35,995,406
Total	\$344,258,787	\$49,014,706	\$40,357,632	\$291,843,053	\$340,857,759	\$332,200,685
Ambulance ESOs and EMTs						
Career Ambulance ESOs						
ERP	\$0	\$0	\$0	\$193,576	\$193,576	\$193,576
Establishment of Service(s) Capability	\$6,354,299	\$904,709	\$744,918	\$0	\$904,709	\$744,918
Org RMP	\$1,431,521	\$203,816	\$167,818	\$603,576	\$807,393	\$771,394
Medical/Fitness Requirements	\$11,834,701	\$1,684,995	\$1,387,388	\$5,826,695	\$7,511,690	\$7,214,083
Training	\$45,103	\$6,422	\$5,287	\$10,304,984	\$10,311,406	\$10,310,272
Facility Preparedness & PPE	\$135,404	\$19,278	\$15,873	\$2,496,739	\$2,516,017	\$2,512,612
Vehicle Preparedness & Operations	\$430,018	\$61,225	\$50,411	\$1,445,355	\$1,506,580	\$1,495,767
Pre-Incident Planning	\$2,730,225	\$388,723	\$320,066	\$0	\$388,723	\$320,066
SOPs	\$2,730,225	\$388,723	\$320,066	\$0	\$388,723	\$320,066
Incident Management System Development	\$722,678	\$102,893	\$84,720	\$0	\$102,893	\$84,720
Emergency Incident Operations	\$498,300	\$70,947	\$58,416	\$0	\$70,947	\$58,416
Post Incident Analysis	\$0	\$0	\$0	\$1,245,758	\$1,245,758	\$1,245,758
ERP Program Evaluation	\$0	\$0	\$0	\$2,899,685	\$2,899,685	\$2,899,685
Total	\$26,912,474	\$3,831,731	\$3,154,963	\$25,016,368	\$28,848,099	\$28,171,331
Volunteer Ambulance ESOs						
ERP	\$0	\$0	\$0	\$106,407	\$106,407	\$106,407

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Service(s) Capability	\$3,493,002	\$497,325	\$409,486	\$0	\$497,325	\$409,486
Org RMP	\$786,911	\$112,038	\$92,250	\$331,800	\$443,838	\$424,050
Medical/Fitness Requirements	\$6,107,372	\$869,552	\$715,970	\$2,965,350	\$3,834,902	\$3,681,320
Training	\$24,792	\$3,530	\$2,906	\$5,233,990	\$5,237,520	\$5,236,897
Facility Preparedness & PPE	\$74,434	\$10,598	\$8,726	\$1,372,494	\$1,383,092	\$1,381,220
Vehicle Preparedness & Operations	\$236,395	\$33,657	\$27,713	\$794,565	\$828,222	\$822,278
Pre-Incident Planning	\$1,500,778	\$213,677	\$175,937	\$0	\$213,677	\$175,937
SOPs	\$1,500,778	\$213,677	\$175,937	\$0	\$213,677	\$175,937
Incident Management System Development	\$397,282	\$56,564	\$46,574	\$0	\$56,564	\$46,574
Emergency Incident Operations	\$273,909	\$38,999	\$32,111	\$0	\$38,999	\$32,111
Post Incident Analysis	\$0	\$0	\$0	\$684,751	\$684,751	\$684,751
ERP Program Evaluation	\$0	\$0	\$0	\$1,593,610	\$1,593,610	\$1,593,610
Total	\$14,395,654	\$2,049,617	\$1,687,610	\$13,082,968	\$15,132,585	\$14,770,578
Combination Ambulance ESOs						
ERP	\$0	\$0	\$0	\$204,667	\$204,667	\$204,667
Establishment of Service(s) Capability	\$6,718,345	\$956,541	\$787,595	\$0	\$956,541	\$787,595
Org RMP	\$1,513,537	\$215,494	\$177,433	\$638,156	\$853,650	\$815,589
Medical/Fitness Requirements	\$12,475,735	\$1,776,264	\$1,462,537	\$6,138,445	\$7,914,709	\$7,600,982
Training	\$47,688	\$6,790	\$5,590	\$10,848,462	\$10,855,251	\$10,854,052
Facility Preparedness & PPE	\$143,160	\$20,383	\$16,783	\$2,639,777	\$2,660,160	\$2,656,560
Vehicle Preparedness & Operations	\$454,653	\$64,732	\$53,299	\$1,528,155	\$1,592,887	\$1,581,454
Pre-Incident Planning	\$2,886,733	\$411,006	\$338,413	\$0	\$411,006	\$338,413
SOPs	\$2,886,733	\$411,006	\$338,413	\$0	\$411,006	\$338,413
Incident Management System Development	\$764,077	\$108,787	\$89,573	\$0	\$108,787	\$89,573
Emergency Incident Operations	\$526,850	\$75,012	\$61,763	\$0	\$75,012	\$61,763
Post Incident Analysis	\$0	\$0	\$0	\$1,317,186	\$1,317,186	\$1,317,186

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
ERP Program Evaluation	\$0	\$0	\$0	\$3,066,024	\$3,066,024	\$3,066,024
Total	\$28,417,511	\$4,046,014	\$3,331,399	\$26,380,871	\$30,426,885	\$29,712,270
Ambulance Total						
ERP	\$0	\$0	\$0	\$504,650	\$504,650	\$504,650
Establishment of Service(s) Capability	\$16,565,646	\$2,358,575	\$1,941,999	\$0	\$2,358,575	\$1,941,999
Org RMP	\$3,731,968	\$531,348	\$437,500	\$1,573,533	\$2,104,881	\$2,011,033
Medical/Fitness Requirements	\$30,417,808	\$4,330,812	\$3,565,895	\$14,930,490	\$19,261,301	\$18,496,385
Training	\$117,583	\$16,741	\$13,784	\$26,387,436	\$26,404,177	\$26,401,220
Facility Preparedness & PPE	\$352,999	\$50,259	\$41,382	\$6,509,010	\$6,559,269	\$6,550,392
Vehicle Preparedness & Operations	\$1,121,066	\$159,615	\$131,423	\$3,768,075	\$3,927,690	\$3,899,498
Pre-Incident Planning	\$7,117,736	\$1,013,406	\$834,416	\$0	\$1,013,406	\$834,416
SOPs	\$7,117,736	\$1,013,406	\$834,416	\$0	\$1,013,406	\$834,416
Incident Management System Development	\$1,884,038	\$268,245	\$220,867	\$0	\$268,245	\$220,867
Emergency Incident Operations	\$1,299,059	\$184,957	\$152,289	\$0	\$184,957	\$152,289
Post Incident Analysis	\$0	\$0	\$0	\$3,247,695	\$3,247,695	\$3,247,695
ERP Program Evaluation	\$0	\$0	\$0	\$7,559,319	\$7,559,319	\$7,559,319
Total	\$69,725,639	\$9,927,362	\$8,173,972	\$64,480,207	\$74,407,570	\$72,654,179
Total Fire and Ambulance						
Career Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$778,877	\$778,877	\$778,877
Establishment of Service(s) Capability	\$31,440,415	\$4,476,408	\$3,685,776	\$0	\$4,476,408	\$3,685,776
Org RMP	\$7,045,211	\$1,003,080	\$825,914	\$2,985,147	\$3,988,226	\$3,811,060
Medical/Fitness Requirements	\$57,849,876	\$8,236,521	\$6,781,770	\$40,220,024	\$48,456,545	\$47,001,794
Training	\$439,438	\$62,566	\$51,515	\$27,173,004	\$27,235,570	\$27,224,520
Facility Preparedness & PPE	\$3,248,146	\$462,463	\$380,782	\$19,394,559	\$19,857,022	\$19,775,340
Vehicle Preparedness & Operations	\$1,598,587	\$227,603	\$187,403	\$7,138,636	\$7,366,239	\$7,326,039
Pre-Incident Planning	\$13,585,348	\$1,934,248	\$1,592,617	\$0	\$1,934,248	\$1,592,617

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
SOPs	\$13,585,348	\$1,934,248	\$1,592,617	\$0	\$1,934,248	\$1,592,617
Incident Management System Development	\$3,569,318	\$508,191	\$418,433	\$0	\$508,191	\$418,433
Emergency Incident Operations	\$2,468,785	\$351,499	\$289,417	\$0	\$351,499	\$289,417
Post Incident Analysis	\$0	\$0	\$0	\$6,192,232	\$6,192,232	\$6,192,232
ERP Program Evaluation	\$0	\$0	\$0	\$14,006,165	\$14,006,165	\$14,006,165
Total	\$134,830,471	\$19,196,826	\$15,806,244	\$117,888,643	\$137,085,469	\$133,694,888
Volunteer Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$1,086,328	\$1,086,328	\$1,086,328
Establishment of Service(s) Capability	\$45,658,958	\$6,500,808	\$5,352,623	\$0	\$6,500,808	\$5,352,623
Org RMP	\$10,239,602	\$1,457,889	\$1,200,394	\$4,330,361	\$5,788,250	\$5,530,755
Medical/Fitness Requirements	\$77,934,215	\$11,096,079	\$9,136,268	\$55,511,758	\$66,607,837	\$64,648,026
Training	\$679,799	\$96,788	\$79,693	\$30,178,362	\$30,275,150	\$30,258,055
Facility Preparedness & PPE	\$5,279,999	\$751,753	\$618,977	\$29,742,992	\$30,494,745	\$30,361,969
Vehicle Preparedness & Operations	\$2,191,642	\$312,040	\$256,927	\$10,358,362	\$10,670,402	\$10,615,289
Pre-Incident Planning	\$19,493,428	\$2,775,426	\$2,285,224	\$0	\$2,775,426	\$2,285,224
SOPs	\$19,493,428	\$2,775,426	\$2,285,224	\$0	\$2,775,426	\$2,285,224
Incident Management System Development	\$5,179,181	\$737,399	\$607,158	\$0	\$737,399	\$607,158
Emergency Incident Operations	\$3,586,285	\$510,606	\$420,422	\$0	\$510,606	\$420,422
Post Incident Analysis	\$0	\$0	\$0	\$8,866,211	\$8,866,211	\$8,866,211
ERP Program Evaluation	\$0	\$0	\$0	\$19,998,466	\$19,998,466	\$19,998,466
Total	\$189,736,537	\$27,014,214	\$22,242,910	\$160,072,839	\$187,087,053	\$182,315,749
Combination Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$541,391	\$541,391	\$541,391
Establishment of Service(s) Capability	\$21,055,011	\$2,997,760	\$2,468,290	\$0	\$2,997,760	\$2,468,290
Org RMP	\$4,711,444	\$670,804	\$552,325	\$2,001,093	\$2,671,897	\$2,553,418
Medical/Fitness Requirements	\$37,796,308	\$5,381,344	\$4,430,880	\$24,772,207	\$30,153,551	\$29,203,087
Training	\$277,785	\$39,550	\$32,565	\$20,178,577	\$20,218,127	\$20,211,142

Table VI-13. Total Cost Summary by Provision - ESOs Considered Small by SBA and RFA Definitions

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Facility Preparedness & PPE	\$1,937,858	\$275,907	\$227,176	\$12,315,942	\$12,591,849	\$12,543,118
Vehicle Preparedness & Operations	\$1,127,975	\$160,598	\$132,233	\$4,786,028	\$4,946,626	\$4,918,261
Pre-Incident Planning	\$9,232,739	\$1,314,534	\$1,082,359	\$0	\$1,314,534	\$1,082,359
SOPs	\$9,232,739	\$1,314,534	\$1,082,359	\$0	\$1,314,534	\$1,082,359
Incident Management System Development	\$2,393,014	\$340,711	\$280,534	\$0	\$340,711	\$280,534
Emergency Incident Operations	\$1,652,543	\$235,285	\$193,729	\$0	\$235,285	\$193,729
Post Incident Analysis	\$0	\$0	\$0	\$4,216,445	\$4,216,445	\$4,216,445
ERP Program Evaluation	\$0	\$0	\$0	\$9,550,094	\$9,550,094	\$9,550,094
Total	\$89,417,417	\$12,731,029	\$10,482,449	\$78,361,778	\$91,092,806	\$88,844,227
Total Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$2,406,596	\$2,406,596	\$2,406,596
Establishment of Service(s) Capability	\$98,154,385	\$13,974,976	\$11,506,688	\$0	\$13,974,976	\$11,506,688
Org RMP	\$21,996,257	\$3,131,772	\$2,578,632	\$9,316,600	\$12,448,373	\$11,895,233
Medical/Fitness Requirements	\$173,580,399	\$24,713,944	\$20,348,918	\$120,503,989	\$145,217,933	\$140,852,907
Training	\$1,397,022	\$198,904	\$163,774	\$77,529,943	\$77,728,847	\$77,693,716
Facility Preparedness & PPE	\$10,466,003	\$1,490,123	\$1,226,935	\$61,453,493	\$62,943,616	\$62,680,428
Vehicle Preparedness & Operations	\$4,918,204	\$700,242	\$576,564	\$22,283,026	\$22,983,267	\$22,859,589
Pre-Incident Planning	\$42,311,515	\$6,024,208	\$4,960,200	\$0	\$6,024,208	\$4,960,200
SOPs	\$42,311,515	\$6,024,208	\$4,960,200	\$0	\$6,024,208	\$4,960,200
Incident Management System Development	\$11,141,513	\$1,586,301	\$1,306,125	\$0	\$1,586,301	\$1,306,125
Emergency Incident Operations	\$7,707,613	\$1,097,391	\$903,567	\$0	\$1,097,391	\$903,567
Post Incident Analysis	\$0	\$0	\$0	\$19,274,888	\$19,274,888	\$19,274,888
ERP Program Evaluation	\$0	\$0	\$0	\$43,554,725	\$43,554,725	\$43,554,725
Total	\$413,984,426	\$58,942,069	\$48,531,604	\$356,323,260	\$415,265,329	\$404,854,864

Source: OSHA.

Note: Figures in rows may not add to totals due to rounding.

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Fire Departments and Firefighters						
Career Fire ESOs						
ERP	\$0	\$0	\$0	\$95,309	\$95,309	\$95,309
Establishment of Service(s) Capability	\$4,205,019	\$598,700	\$492,957	\$0	\$598,700	\$492,957
Org RMP	\$952,080	\$135,555	\$111,613	\$396,700	\$532,255	\$508,313
Medical/Fitness Requirements	\$5,021,167	\$714,901	\$588,634	\$3,215,033	\$3,929,934	\$3,803,667
Training	\$61,425	\$8,745	\$7,201	\$1,226,645	\$1,235,390	\$1,233,846
Facility Preparedness & PPE	\$505,046	\$71,907	\$59,207	\$2,814,043	\$2,885,950	\$2,873,250
Vehicle Preparedness & Operations	\$191,098	\$27,208	\$22,403	\$955,492	\$982,700	\$977,895
Pre-Incident Planning	\$1,706,236	\$242,930	\$200,023	\$0	\$242,930	\$200,023
SOPs	\$1,706,236	\$242,930	\$200,023	\$0	\$242,930	\$200,023
Incident Management System Development	\$477,746	\$68,020	\$56,006	\$0	\$68,020	\$56,006
Emergency Incident Operations	\$329,534	\$46,918	\$38,631	\$0	\$46,918	\$38,631
Post Incident Analysis	\$0	\$0	\$0	\$767,806	\$767,806	\$767,806
ERP Program Evaluation	\$0	\$0	\$0	\$1,748,892	\$1,748,892	\$1,748,892
Total	\$15,155,588	\$2,157,815	\$1,776,697	\$11,219,921	\$13,377,736	\$12,996,618
Volunteer Fire ESOs						
ERP	\$0	\$0	\$0	\$198,028	\$198,028	\$198,028
Establishment of Service(s) Capability	\$8,736,932	\$1,243,943	\$1,024,235	\$0	\$1,243,943	\$1,024,235
Org RMP	\$1,978,173	\$281,647	\$231,902	\$824,239	\$1,105,886	\$1,056,141
Medical/Fitness Requirements	\$9,919,293	\$1,412,284	\$1,162,844	\$6,179,163	\$7,591,447	\$7,342,006
Training	\$127,624	\$18,171	\$14,961	\$2,326,715	\$2,344,886	\$2,341,677
Facility Preparedness & PPE	\$1,049,354	\$149,404	\$123,016	\$5,846,846	\$5,996,251	\$5,969,863
Vehicle Preparedness & Operations	\$397,053	\$56,531	\$46,547	\$1,985,264	\$2,041,795	\$2,031,810
Pre-Incident Planning	\$3,545,113	\$504,744	\$415,595	\$0	\$504,744	\$415,595
SOPs	\$3,545,113	\$504,744	\$415,595	\$0	\$504,744	\$415,595
Incident Management System Development	\$992,632	\$141,328	\$116,367	\$0	\$141,328	\$116,367
Emergency Incident Operations	\$684,685	\$97,484	\$80,266	\$0	\$97,484	\$80,266
Post Incident Analysis	\$0	\$0	\$0	\$1,595,301	\$1,595,301	\$1,595,301

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)		
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%	
ERP Program Evaluation	\$0	\$0	\$0	\$3,633,741	\$3,633,741	\$3,633,741	
Total	\$30,975,973	\$4,410,282	\$3,631,329	\$22,589,297	\$26,999,578	\$26,220,626	
Combination Fire ESOs							
ERP	\$0	\$0	\$0	\$22,828	\$22,828	\$22,828	
Establishment of Service(s) Capability	\$1,007,146	\$143,395	\$118,068	\$0	\$143,395	\$118,068	
Org RMP	\$228,033	\$32,467	\$26,732	\$95,014	\$127,481	\$121,746	
Medical/Fitness Requirements	\$1,043,768	\$148,609	\$122,361	\$615,061	\$763,670	\$737,422	
Training	\$14,712	\$2,095	\$1,725	\$225,122	\$227,217	\$226,847	
Facility Preparedness & PPE	\$120,964	\$17,223	\$14,181	\$673,993	\$691,215	\$688,173	
Vehicle Preparedness & Operations	\$45,770	\$6,517	\$5,366	\$228,850	\$235,367	\$234,216	
Pre-Incident Planning	\$408,661	\$58,184	\$47,908	\$0	\$58,184	\$47,908	
SOPs	\$408,661	\$58,184	\$47,908	\$0	\$58,184	\$47,908	
Incident Management System Development	\$114,425	\$16,292	\$13,414	\$0	\$16,292	\$13,414	
Emergency Incident Operations	\$78,927	\$11,237	\$9,253	\$0	\$11,237	\$9,253	
Post Incident Analysis	\$0	\$0	\$0	\$183,898	\$183,898	\$183,898	
ERP Program Evaluation	\$0	\$0	\$0	\$418,878	\$418,878	\$418,878	
Total	\$3,471,068	\$494,202	\$406,915	\$2,463,643	\$2,957,845	\$2,870,558	
Fire Total							
ERP	\$0	\$0	\$0	\$316,165	\$316,165	\$316,165	
Establishment of Service(s) Capability	\$13,949,097	\$1,986,038	\$1,635,260	\$0	\$1,986,038	\$1,635,260	
Org RMP	\$3,158,286	\$449,669	\$370,247	\$1,315,953	\$1,765,621	\$1,686,200	
Medical/Fitness Requirements	\$15,984,228	\$2,275,794	\$1,873,839	\$10,009,257	\$12,285,051	\$11,883,096	
Training	\$203,760	\$29,011	\$23,887	\$3,778,482	\$3,807,493	\$3,802,369	
Facility Preparedness & PPE	\$1,675,363	\$238,534	\$196,404	\$9,334,882	\$9,573,416	\$9,531,286	
Vehicle Preparedness & Operations	\$633,921	\$90,256	\$74,315	\$3,169,606	\$3,259,862	\$3,243,921	
Pre-Incident Planning	\$5,660,011	\$805,858	\$663,526	\$0	\$805,858	\$663,526	
SOPs	\$5,660,011	\$805,858	\$663,526	\$0	\$805,858	\$663,526	
Incident Management System Development	\$1,584,803	\$225,640	\$185,787	\$0	\$225,640	\$185,787	
Emergency Incident Operations	\$1,093,146	\$155,639	\$128,150	\$0	\$155,639	\$128,150	

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Post Incident Analysis	\$0	\$0	\$0	\$2,547,005	\$2,547,005	\$2,547,005
ERP Program Evaluation	\$0	\$0	\$0	\$5,801,511	\$5,801,511	\$5,801,511
Total	\$49,602,628	\$7,062,298	\$5,814,941	\$36,272,861	\$43,335,160	\$42,087,802
Ambulance ESOs and EMTs						
Career Ambulance ESOs						
ERP	\$0	\$0	\$0	\$120,120	\$120,120	\$120,120
Establishment of Service(s) Capability	\$3,997,495	\$569,153	\$468,628	\$0	\$569,153	\$468,628
Org RMP	\$905,093	\$128,865	\$106,105	\$377,122	\$505,987	\$483,227
Medical/Fitness Requirements	\$6,173,576	\$878,978	\$723,731	\$2,922,301	\$3,801,280	\$3,646,033
Training	\$27,338	\$3,892	\$3,205	\$3,868,046	\$3,871,939	\$3,871,251
Facility Preparedness & PPE	\$90,023	\$12,817	\$10,553	\$1,560,394	\$1,573,211	\$1,570,947
Vehicle Preparedness & Operations	\$272,501	\$38,798	\$31,945	\$908,337	\$947,135	\$940,283
Pre-Incident Planning	\$1,622,031	\$230,941	\$190,151	\$0	\$230,941	\$190,151
SOPs	\$1,622,031	\$230,941	\$190,151	\$0	\$230,941	\$190,151
Incident Management System Development	\$454,169	\$64,663	\$53,242	\$0	\$64,663	\$53,242
Emergency Incident Operations	\$313,271	\$44,603	\$36,725	\$0	\$44,603	\$36,725
Post Incident Analysis	\$0	\$0	\$0	\$729,914	\$729,914	\$729,914
ERP Program Evaluation	\$0	\$0	\$0	\$1,703,132	\$1,703,132	\$1,703,132
Total	\$15,477,526	\$2,203,651	\$1,814,438	\$12,189,367	\$14,393,019	\$14,003,805
Volunteer Ambulance ESOs						
ERP	\$0	\$0	\$0	\$64,869	\$64,869	\$64,869
Establishment of Service(s) Capability	\$2,158,798	\$307,364	\$253,077	\$0	\$307,364	\$253,077
Org RMP	\$488,784	\$69,592	\$57,300	\$203,660	\$273,252	\$260,961
Medical/Fitness Requirements	\$3,334,130	\$474,705	\$390,862	\$1,578,252	\$2,052,958	\$1,969,114
Training	\$14,763	\$2,102	\$1,731	\$2,089,056	\$2,091,158	\$2,090,787
Facility Preparedness & PPE	\$48,616	\$6,922	\$5,699	\$842,671	\$849,593	\$848,371
Vehicle Preparedness & Operations	\$147,161	\$20,952	\$17,252	\$490,536	\$511,489	\$507,788
Pre-Incident Planning	\$875,958	\$124,717	\$102,689	\$0	\$124,717	\$102,689
SOPs	\$875,958	\$124,717	\$102,689	\$0	\$124,717	\$102,689

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)		
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%	
Incident Management System Development	\$245,268	\$34,921	\$28,753	\$0	\$34,921	\$28,753	
Emergency Incident Operations	\$169,178	\$24,087	\$19,833	\$0	\$24,087	\$19,833	
Post Incident Analysis	\$0	\$0	\$0	\$394,181	\$394,181	\$394,181	
ERP Program Evaluation	\$0	\$0	\$0	\$919,756	\$919,756	\$919,756	
Total	\$8,358,614	\$1,190,079	\$979,885	\$6,582,982	\$7,773,061	\$7,562,867	
Combination Ambulance ESOs							
ERP	\$0	\$0	\$0	\$126,442	\$126,442	\$126,442	
Establishment of Service(s) Capability	\$4,207,889	\$599,109	\$493,293	\$0	\$599,109	\$493,293	
Org RMP	\$952,730	\$135,647	\$111,689	\$396,971	\$532,618	\$508,660	
Medical/Fitness Requirements	\$6,498,501	\$925,240	\$761,823	\$3,076,107	\$4,001,347	\$3,837,929	
Training	\$28,776	\$4,097	\$3,373	\$4,071,628	\$4,075,725	\$4,075,001	
Facility Preparedness & PPE	\$94,761	\$13,492	\$11,109	\$1,642,520	\$1,656,011	\$1,653,628	
Vehicle Preparedness & Operations	\$286,843	\$40,840	\$33,627	\$956,144	\$996,984	\$989,771	
Pre-Incident Planning	\$1,707,401	\$243,095	\$200,159	\$0	\$243,095	\$200,159	
SOPs	\$1,707,401	\$243,095	\$200,159	\$0	\$243,095	\$200,159	
Incident Management System Development	\$478,072	\$68,067	\$56,045	\$0	\$68,067	\$56,045	
Emergency Incident Operations	\$329,759	\$46,950	\$38,658	\$0	\$46,950	\$38,658	
Post Incident Analysis	\$0	\$0	\$0	\$768,330	\$768,330	\$768,330	
ERP Program Evaluation	\$0	\$0	\$0	\$1,792,771	\$1,792,771	\$1,792,771	
Total	\$16,292,132	\$2,319,633	\$1,909,935	\$12,830,913	\$15,150,546	\$14,740,848	
Ambulance Total							
ERP	\$0	\$0	\$0	\$311,432	\$311,432	\$311,432	
Establishment of Service(s) Capability	\$10,364,182	\$1,475,626	\$1,214,998	\$0	\$1,475,626	\$1,214,998	
Org RMP	\$2,346,607	\$334,104	\$275,094	\$977,753	\$1,311,857	\$1,252,847	
Medical/Fitness Requirements	\$16,006,207	\$2,278,924	\$1,876,416	\$7,576,661	\$9,855,584	\$9,453,076	
Training	\$70,877	\$10,091	\$8,309	\$10,028,730	\$10,038,822	\$10,037,039	
Facility Preparedness & PPE	\$233,399	\$33,231	\$27,361	\$4,045,584	\$4,078,815	\$4,072,946	
Vehicle Preparedness & Operations	\$706,505	\$100,590	\$82,824	\$2,355,018	\$2,455,608	\$2,437,842	
Pre-Incident Planning	\$4,205,389	\$598,753	\$493,000	\$0	\$598,753	\$493,000	

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
SOPs	\$4,205,389	\$598,753	\$493,000	\$0	\$598,753	\$493,000
Incident Management System Development	\$1,177,509	\$167,651	\$138,040	\$0	\$167,651	\$138,040
Emergency Incident Operations	\$812,208	\$115,640	\$95,216	\$0	\$115,640	\$95,216
Post Incident Analysis	\$0	\$0	\$0	\$1,892,425	\$1,892,425	\$1,892,425
ERP Program Evaluation	\$0	\$0	\$0	\$4,415,659	\$4,415,659	\$4,415,659
Total	\$40,128,272	\$5,713,363	\$4,704,258	\$31,603,262	\$37,316,625	\$36,307,520
Total Fire and Ambulance						
Career Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$215,430	\$215,430	\$215,430
Establishment of Service(s) Capability	\$8,202,514	\$1,167,853	\$961,585	\$0	\$1,167,853	\$961,585
Org RMP	\$1,857,173	\$264,420	\$217,717	\$773,822	\$1,038,242	\$991,539
Medical/Fitness Requirements	\$11,194,743	\$1,593,880	\$1,312,365	\$6,137,335	\$7,731,214	\$7,449,700
Training	\$88,762	\$12,638	\$10,406	\$5,094,691	\$5,107,329	\$5,105,097
Facility Preparedness & PPE	\$595,069	\$84,724	\$69,760	\$4,374,437	\$4,459,161	\$4,444,197
Vehicle Preparedness & Operations	\$463,600	\$66,006	\$54,348	\$1,863,830	\$1,929,836	\$1,918,178
Pre-Incident Planning	\$3,328,267	\$473,870	\$390,174	\$0	\$473,870	\$390,174
SOPs	\$3,328,267	\$473,870	\$390,174	\$0	\$473,870	\$390,174
Incident Management System Development	\$931,915	\$132,684	\$109,249	\$0	\$132,684	\$109,249
Emergency Incident Operations	\$642,805	\$91,521	\$75,356	\$0	\$91,521	\$75,356
Post Incident Analysis	\$0	\$0	\$0	\$1,497,720	\$1,497,720	\$1,497,720
ERP Program Evaluation	\$0	\$0	\$0	\$3,452,024	\$3,452,024	\$3,452,024
Total	\$30,633,114	\$4,361,466	\$3,591,135	\$23,409,288	\$27,770,755	\$27,000,424
Volunteer Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$262,897	\$262,897	\$262,897
Establishment of Service(s) Capability	\$10,895,730	\$1,551,307	\$1,277,312	\$0	\$1,551,307	\$1,277,312
Org RMP	\$2,466,958	\$351,239	\$289,203	\$1,027,899	\$1,379,138	\$1,317,102
Medical/Fitness Requirements	\$13,253,424	\$1,886,989	\$1,553,706	\$7,757,415	\$9,644,404	\$9,311,121
Training	\$142,387	\$20,273	\$16,692	\$4,415,771	\$4,436,044	\$4,432,463
Facility Preparedness & PPE	\$1,097,969	\$156,326	\$128,715	\$6,689,518	\$6,845,844	\$6,818,233

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Vehicle Preparedness & Operations	\$544,214	\$77,484	\$63,798	\$2,475,800	\$2,553,284	\$2,539,598
Pre-Incident Planning	\$4,421,071	\$629,461	\$518,284	\$0	\$629,461	\$518,284
SOPs	\$4,421,071	\$629,461	\$518,284	\$0	\$629,461	\$518,284
Incident Management System Development	\$1,237,900	\$176,249	\$145,120	\$0	\$176,249	\$145,120
Emergency Incident Operations	\$853,864	\$121,571	\$100,099	\$0	\$121,571	\$100,099
Post Incident Analysis	\$0	\$0	\$0	\$1,989,482	\$1,989,482	\$1,989,482
ERP Program Evaluation	\$0	\$0	\$0	\$4,553,497	\$4,553,497	\$4,553,497
Total	\$39,334,587	\$5,600,360	\$4,611,214	\$29,172,279	\$34,772,639	\$33,783,492
Combination Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$149,270	\$149,270	\$149,270
Establishment of Service(s) Capability	\$5,215,035	\$742,504	\$611,361	\$0	\$742,504	\$611,361
Org RMP	\$1,180,763	\$168,114	\$138,421	\$491,984	\$660,099	\$630,406
Medical/Fitness Requirements	\$7,542,268	\$1,073,849	\$884,184	\$3,691,168	\$4,765,017	\$4,575,352
Training	\$43,488	\$6,192	\$5,098	\$4,296,750	\$4,302,942	\$4,301,848
Facility Preparedness & PPE	\$215,725	\$30,714	\$25,289	\$2,316,512	\$2,347,227	\$2,341,802
Vehicle Preparedness & Operations	\$332,613	\$47,357	\$38,992	\$1,184,995	\$1,232,352	\$1,223,987
Pre-Incident Planning	\$2,116,062	\$301,280	\$248,067	\$0	\$301,280	\$248,067
SOPs	\$2,116,062	\$301,280	\$248,067	\$0	\$301,280	\$248,067
Incident Management System Development	\$592,497	\$84,358	\$69,459	\$0	\$84,358	\$69,459
Emergency Incident Operations	\$408,686	\$58,188	\$47,910	\$0	\$58,188	\$47,910
Post Incident Analysis	\$0	\$0	\$0	\$952,228	\$952,228	\$952,228
ERP Program Evaluation	\$0	\$0	\$0	\$2,211,649	\$2,211,649	\$2,211,649
Total	\$19,763,200	\$2,813,835	\$2,316,850	\$15,294,556	\$18,108,391	\$17,611,406
Total Fire and Ambulance ESOs						
ERP	\$0	\$0	\$0	\$627,597	\$627,597	\$627,597
Establishment of Service(s) Capability	\$24,313,279	\$3,461,664	\$2,850,258	\$0	\$3,461,664	\$2,850,258
Org RMP	\$5,504,893	\$783,773	\$645,341	\$2,293,706	\$3,077,479	\$2,939,047
Medical/Fitness Requirements	\$31,990,435	\$4,554,718	\$3,750,255	\$17,585,917	\$22,140,636	\$21,336,172
Training	\$274,638	\$39,102	\$32,196	\$13,807,213	\$13,846,315	\$13,839,408

Table VI-14. Total Cost Summary by Provision - ESOs with Fewer than 20 Employees

	One-Time			Annual	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Discounted - 7%	Discounted - 3%
Facility Preparedness & PPE	\$1,908,762	\$271,765	\$223,765	\$13,380,467	\$13,652,231	\$13,604,232
Vehicle Preparedness & Operations	\$1,340,427	\$190,847	\$157,139	\$5,524,624	\$5,715,471	\$5,681,763
Pre-Incident Planning	\$9,865,400	\$1,404,611	\$1,156,526	\$0	\$1,404,611	\$1,156,526
SOPs	\$9,865,400	\$1,404,611	\$1,156,526	\$0	\$1,404,611	\$1,156,526
Incident Management System Development	\$2,762,312	\$393,291	\$323,827	\$0	\$393,291	\$323,827
Emergency Incident Operations	\$1,905,354	\$271,280	\$223,366	\$0	\$271,280	\$223,366
Post Incident Analysis	\$0	\$0	\$0	\$4,439,430	\$4,439,430	\$4,439,430
ERP Program Evaluation	\$0	\$0	\$0	\$10,217,170	\$10,217,170	\$10,217,170
Total	\$89,730,901	\$12,775,662	\$10,519,199	\$67,876,123	\$80,651,785	\$78,395,322

Source: OSHA.

Note: Figures in rows may not add to totals due to rounding.

Economic Impacts

This section estimates the economic impacts of the draft standard by calculating the average annualized cost per entity and comparing it to the average revenue per entity. The average annualized cost per entity is calculated by dividing the total annualized costs (from earlier in this section) by the number of ESOs.

To estimate fire department revenue, OSHA used data from Part 1 of Firehouse Magazine's (2018) 2017 National Run Survey, which presents data from a survey of 259 fire departments, including statistics about funding and staffing. In order to extrapolate from these 259 fire departments to the entire universe of fire departments, OSHA calculated the median budget per employee (\$120,000) and multiplied that estimate by the number of firefighters in each size class as reported in the fire department profile.

To estimate emergency medical service revenue, OSHA used revenue data from the U.S. Census Bureau's (2015) 2012 statistics of U.S. businesses for detailed employment size classes in NAICS 621910 Ambulance Services, inflating those data to 2017 dollars using the Bureau of Economic Analysis' (BEA, 2018) implicit price deflators for gross domestic product.

For local government ESOs, OSHA also used revenue for the entire locality as an alternative revenue measure in order to assess regulatory impacts. To the extent that a city or town's budget can be reallocated to different functions, this may result in a better representation of how the costs of the draft standard might impact a given location. To estimate revenue for the entire locality, the agency used U.S. Census Bureau (2018) data on local government finances, which breaks down expenditures for various functions for local governments in the U.S. and by state. OSHA used the ratio of expenditures for current operations (\$1.4 billion) to expenditures for fire protection (\$46 million), a multiplier of approximately 30, to inflate estimated revenue per ESO to estimated total expenditures.

Note that this traditional approach to gauging impacts may not be fully appropriate because ESOs do not directly bear the cost of volunteer responders' labor time. Accounting for this complication would imply a smaller impact on affected entities than projected here. OSHA requests comment on this issue.

Table VI-15 and Table VI-16 show economic impacts for all ESOs with total costs including one time and annual costs annualized using a 3 and 7 percent discount rate, respectively.

Table VI-17 and Table VI-18 show economic impacts for ESOs considered small by RFA or SBA definitions with total costs including one time and annual costs annualized using a 3 and 7 percent discount rate, respectively.

Table VI-19 and Table VI-20 show economic impacts for ESOs with fewer than 20 employees with total costs annualized using a 3 and 7 percent discount rate, respectively.

Table VI-15. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 3 Percent Discount Rate - All ESOs

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	4,296	\$112,509,645	\$26,189	\$2,003,633	1.31%	\$1,663,422	1.57%
25-49	4,879	\$180,994,230	\$37,097	\$3,886,078	0.95%	\$5,034,452	0.74%
50-99	1,686	\$80,815,032	\$47,933	\$7,638,364	0.63%	\$9,897,073	0.48%
100-249	567	\$43,544,315	\$76,798	\$16,891,622	0.45%	\$22,593,230	0.34%
250-499	100	\$14,731,785	\$147,318	\$40,887,000	0.36%	\$49,879,796	0.30%
500+	59	\$30,049,667	\$509,316	\$146,540,400	0.35%	\$436,292,724	0.12%
Total/Average	11,587	\$462,644,674	\$39,928	\$4,654,723	0.86%	\$6,528,117	0.61%
Emergency Medical Services							
<25	4,126	\$50,109,388	\$12,145	\$629,171	1.93%	\$960,174	1.26%
25-49	1,210	\$33,783,697	\$27,930	\$2,036,290	1.37%	\$3,008,609	0.93%
50-99	615	\$29,285,437	\$47,586	\$5,321,979	0.89%	\$6,838,987	0.70%
100-249	342	\$26,141,449	\$76,349	\$11,798,928	0.65%	\$15,296,880	0.50%
250-499	108	\$13,499,938	\$124,503	\$23,957,353	0.52%	\$32,249,002	0.39%
500+	187	\$40,869,861	\$218,555	\$73,767,914	0.30%	\$189,371,660	0.12%
Total/Average	6,589	\$193,689,770	\$29,397	\$4,328,495	0.68%	\$8,406,709	0.35%
Total							
<25	8,422	\$162,619,033	\$19,309	\$1,589,909	1.21%	\$1,447,764	1.33%
25-49	6,089	\$214,777,927	\$35,276	\$3,687,287	0.96%	\$4,813,433	0.73%
50-99	2,301	\$110,100,469	\$47,840	\$7,238,244	0.66%	\$9,343,308	0.51%
100-249	909	\$69,685,764	\$76,629	\$15,641,623	0.49%	\$20,641,936	0.37%
250-499	208	\$28,231,723	\$135,449	\$34,755,754	0.39%	\$43,245,162	0.31%
500+	246	\$70,919,528	\$288,291	\$231,394,586	0.12%	\$367,082,760	0.08%
Total/Average	18,176	\$656,334,444	\$36,110	\$6,083,392	0.59%	\$8,283,535	0.44%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Table VI-16. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 7 Percent Discount Rate - All ESOs

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	4,296	\$115,562,007	\$26,900	\$2,003,633	1.34%	\$1,663,422	1.62%
25-49	4,879	\$185,417,044	\$38,003	\$3,886,078	0.98%	\$5,034,452	0.75%
50-99	1,686	\$82,509,539	\$48,938	\$7,638,364	0.64%	\$9,897,073	0.49%
100-249	567	\$44,329,436	\$78,182	\$16,891,622	0.46%	\$22,593,230	0.35%
250-499	100	\$14,944,470	\$149,445	\$40,887,000	0.37%	\$49,879,796	0.30%
500+	59	\$30,362,347	\$514,616	\$146,540,400	0.35%	\$436,292,724	0.12%
Total/Average	11,587	\$473,124,843	\$40,832	\$4,654,723	0.88%	\$6,528,117	0.63%
Emergency Medical Services							
<25	4,126	\$51,357,075	\$12,447	\$629,171	1.98%	\$960,174	1.30%
25-49	1,210	\$34,432,342	\$28,466	\$2,036,290	1.40%	\$3,008,609	0.95%
50-99	615	\$29,724,100	\$48,299	\$5,321,979	0.91%	\$6,838,987	0.71%
100-249	342	\$26,518,771	\$77,451	\$11,798,928	0.66%	\$15,296,880	0.51%
250-499	108	\$13,673,957	\$126,108	\$23,957,353	0.53%	\$32,249,002	0.39%
500+	187	\$41,328,055	\$221,006	\$73,767,914	0.30%	\$189,371,660	0.12%
Total/Average	6,589	\$197,034,300	\$29,904.13	\$4,328,495	0.69%	\$8,406,709	0.36%
Total							
<25	8,422	\$166,919,082	\$19,819	\$1,589,909	1.25%	\$1,447,764	1.37%
25-49	6,089	\$219,849,386	\$36,108	\$3,687,287	0.98%	\$4,813,433	0.75%
50-99	2,301	\$112,233,639	\$48,767	\$7,238,244	0.67%	\$9,343,308	0.52%
100-249	909	\$70,848,207	\$77,907	\$15,641,623	0.50%	\$20,641,936	0.38%
250-499	208	\$28,618,427	\$137,304	\$34,755,754	0.40%	\$43,245,162	0.32%
500+	246	\$71,690,402	\$291,424	\$231,394,586	0.13%	\$367,082,760	0.08%
Total/Average	18,176	\$670,159,143	\$36,871	\$6,083,392	0.61%	\$8,283,535	0.45%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Table VI-17. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 3 Percent Discount Rate - RFA/SBA Small ESOs

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	4,294	\$105,016,372	\$24,457	\$2,003,967	1.22%	\$1,663,700	1.47%
25-49	4,879	\$168,560,628	\$34,548	\$3,886,078	0.89%	\$5,034,452	0.69%
50-99	1,346	\$56,629,319	\$42,075	\$9,442,702	0.45%	\$12,234,965	0.34%
100-249	24	\$1,746,779	\$72,782	\$663,700,000	0.01%	\$887,725,665	0.0082%
250-499	2	\$247,586	\$123,793	\$3,270,960,000	0.004%	\$3,990,383,700	0.0031%
500+	0	\$0	\$0	\$0	0.00%	\$0	0.00%
Total/Average	10,545	\$332,200,685	\$31,503	\$4,972,252	0.63%	\$6,973,441	0.45%
Emergency Medical Services							
<25	3,615	\$26,897,186	\$7,440	\$629,171	1.18%	\$960,174	0.77%
25-49	1,061	\$14,135,972	\$13,323	\$2,036,290	0.65%	\$3,008,609	0.44%
50-99	538	\$10,690,876	\$19,885	\$5,321,979	0.37%	\$6,838,987	0.29%
100-249	298	\$9,068,046	\$30,401	\$11,798,928	0.26%	\$15,296,880	0.20%
250-499	94	\$4,501,870	\$47,812	\$23,957,353	0.20%	\$32,249,002	0.15%
500+	12	\$7,360,228	\$601,851	\$73,767,914	0.82%	\$189,371,660	0.32%
Total/Average	5,619	\$72,654,179	\$12,930.77	\$2,597,021	0.50%	\$5,043,878	0.26%
Total							
<25	7,909	\$131,913,558	\$16,678	\$1,711,476	0.97%	\$1,558,463	1.07%
25-49	5,940	\$182,696,601	\$30,757	\$3,715,014	0.83%	\$4,849,628	0.63%
50-99	1,884	\$67,320,195	\$35,741	\$8,621,213	0.41%	\$11,128,479	0.32%
100-249	322	\$10,814,825	\$33,557	\$55,610,107	0.06%	\$73,387,540	0.05%
250-499	96	\$4,749,457	\$49,393	\$81,446,061	0.06%	\$101,340,001	0.05%
500+	12	\$7,360,228	\$601,851	\$234,144,610	0.26%	\$371,445,380	0.162%
Total/Average	16,164	\$404,854,864	\$25,047	\$4,500,089	0.56%	\$6,127,607	0.41%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Table VI-18. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 7 Percent Discount Rate - RFA/SBA Small ESOs

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	4,294	\$108,000,274	\$25,151	\$2,003,967	1.26%	\$59,872,881	0.04%
25-49	4,879	\$172,904,390	\$35,438	\$3,886,078	0.91%	\$116,770,105	0.03%
50-99	1,346	\$57,921,117	\$43,034	\$9,442,702	0.46%	\$281,365,625	0.02%
100-249	24	\$1,780,463	\$74,186	\$663,700,000	0.01%	\$19,926,104,455	0.0004%
250-499	2	\$251,516	\$125,758	\$3,270,960,000	0.004%	\$96,686,427,333	0.0001%
500+	0	\$0	\$0	\$0	0.00%	\$0	0.00%
Total/Average	10,545	\$340,857,759	\$32,324	\$4,972,252	0.65%	\$147,944,781	0.02%
Emergency Medical Services							
<25	3,615	\$27,770,546	\$7,681	\$629,171	1.22%	\$19,450,079	0.04%
25-49	1,061	\$14,499,617	\$13,666	\$2,036,290	0.67%	\$62,949,486	0.02%
50-99	538	\$10,900,146	\$20,274	\$5,321,979	0.38%	\$164,522,701	0.01%
100-249	298	\$9,227,890	\$30,937	\$11,798,928	0.26%	\$364,749,914	0.01%
250-499	94	\$4,570,093	\$48,537	\$23,957,353	0.20%	\$740,613,248	0.01%
500+	12	\$7,439,277	\$608,315	\$73,767,914	0.82%	\$2,280,447,827	0.03%
Total/Average	5,619	\$74,407,570	\$13,243	\$2,597,021	0.51%	\$80,283,845	0.02%
Total							
<25	7,909	\$135,770,820	\$17,166	\$1,669,422	1.03%	\$50,036,325	0.03%
25-49	5,940	\$187,404,006	\$31,549	\$3,716,321	0.85%	\$111,830,929	0.03%
50-99	1,884	\$68,821,263	\$36,538	\$8,651,315	0.42%	\$258,925,877	0.01%
100-249	322	\$11,008,353	\$34,158	\$57,611,163	0.06%	\$1,739,420,723	0.00%
250-499	96	\$4,821,609	\$50,143	\$87,391,473	0.06%	\$2,615,030,639	0.00%
500+	12	\$7,439,277	\$608,315	\$725,768,105	0.08%	\$20,801,268,776	0.003%
Total/Average	16,164	\$415,265,329	\$25,691	\$4,521,534	0.57%	\$135,105,602	0.02%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Table VI-19. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 3 Percent Discount Rate - ESOs with Fewer than 20 Responders

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	1,897	\$42,087,802	\$22,181	\$1,589,467	1.4%	\$47,133,892	0.05%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	1,897	\$42,087,802	\$22,181	\$1,589,467	1.4%	\$47,133,892	0.05%
Emergency Medical Services							
<25	3,592	\$36,307,520	\$10,109	\$567,480	1.8%	\$17,542,974	0.06%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	3,592	\$36,307,520	\$10,109	\$567,480	1.8%	\$17,542,974	0.06%
Total							
<25	5,489	\$78,395,322	\$14,282	\$1,149,842	1.2%	\$34,404,860	0.04%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	5,489	\$78,395,322	\$14,282	\$1,149,842	1.2%	\$34,404,860	0.04%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Table VI-20. Screening Analysis for ESOs Affected by the Draft Standard with Costs Calculated Using a 7 Percent Discount Rate - ESOs with Fewer than 20 Responders

Employment Size Class	ESOs	Total Annualized Costs	Average Cost per ESO	Average Revenue per ESO	Costs as % of Revenue	Average Revenue per Locality	Costs as % of Locality
Fire Departments							
<25	1,897	\$43,335,160	\$22,838	\$1,589,467	1.4%	\$47,133,892	0.05%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	1,897	\$43,335,160	\$22,838	\$1,589,467	1.4%	\$47,133,892	0.05%
Emergency Medical Services							
<25	3,592	\$37,316,625	\$10,390	\$567,480	1.8%	\$17,542,974	0.06%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	3,592	\$37,316,625	\$10,390	\$567,480	1.8%	\$17,542,974	0.06%
Total							
<25	5,489	\$80,651,785	\$14,693	\$1,149,842	1.3%	\$34,404,860	0.04%
25-49	0	\$0	\$0	\$0	0.0%	\$0	0.00%
50-99	0	\$0	\$0	\$0	0.0%	\$0	0.00%
100-249	0	\$0	\$0	\$0	0.0%	\$0	0.00%
250-499	0	\$0	\$0	\$0	0.0%	\$0	0.00%
500+	0	\$0	\$0	\$0	0.0%	\$0	0.00%
Total/Average	5,489	\$80,651,785	\$14,693	\$1,149,842	1.3%	\$34,404,860	0.04%

Sources: OSHA derived from USFA, 2020; BLS, 2018; BLS, 2019; EPA, 2002; Rice, 2002; U.S. Census, 2015.

Note: Figures may not add to totals due to rounding.

Costs and Impacts for a Model ESO

This section shows the costs for several “model” fire departments or emergency medical services ESOs with different numbers of responders. These model ESOs are for organizations with only career responders because these are intended to show the financial impact to ESOs when responders would be paid a wage to comply with the various provisions of the draft standard. In the case of volunteer ESOs, while it would be an opportunity cost to that volunteer responder (in other words, the time spent meeting the requirements of the draft standard would take away from time that the individual could spend doing something else, like working at a paid job) the ESO is not compensating that responder with a wage. The chosen representations of ESOs are meant to show the most extreme of potential impacts. To calculate the costs for each type of ESO, we first calculate one-time and annual costs per ESO and per responder for each rule provision. Each model ESO would have the per-ESO costs plus the product of per-responder costs multiplied by the number of responders. To estimate revenue, the model fire departments are assigned revenue by multiplying the estimated median revenue per employee, \$120,000 (Firehouse Magazine, 2018) by the number of employees. Locality revenue is estimated by multiplying department revenue by the ratio of expenditures for current operations to expenditures on fire protection in the U.S Census Bureau’s (2018) Annual Survey of State and Local Government Finances, 30.91. Model emergency medical service ESOs are assigned revenue using the U.S. Census Bureau’s (2015) 2012 statistics of U.S. Businesses for the relevant size class for NAICS 621910 Ambulance Services and inflating to 2017 dollars using the BEA (2018) implicit price deflators for gross domestic product.

Table VI-21 shows the costs and impacts for a model fire department with 20 responders.

Table VI-21. Costs and Impacts for a Model Fire Department with 20 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$167	\$167	\$167	\$167
Establishment of Service(s) Capability	\$7,351	\$1,047	\$862	\$0	\$7,351	\$1,047	\$862
Risk Management Plan	\$1,664	\$237	\$195	\$694	\$2,358	\$931	\$889
Medical/Fitness Requirements	\$10,945	\$1,558	\$1,283	\$1,387	\$12,332	\$2,945	\$2,670
Training	\$107	\$15	\$13	\$3,081	\$3,188	\$3,096	\$3,094
Facility Preparedness & PPE	\$883	\$126	\$104	\$4,920	\$5,803	\$5,045	\$5,023
Vehicle Preparedness & Operations	\$334	\$48	\$39	\$1,670	\$2,005	\$1,718	\$1,710
Pre-Incident Planning	\$2,983	\$425	\$350	\$0	\$2,983	\$425	\$350
SOPs	\$2,983	\$425	\$350	\$0	\$2,983	\$425	\$350
Incident Management System Development	\$835	\$119	\$98	\$0	\$835	\$119	\$98
Emergency Incident Operations	\$576	\$82	\$68	\$0	\$576	\$82	\$68
Post Incident Analysis	\$0	\$0	\$0	\$1,342	\$1,342	\$1,342	\$1,342
ER Program Evaluation	\$0	\$0	\$0	\$3,058	\$3,058	\$3,058	\$3,058
Total	\$28,662	\$4,081	\$3,360	\$16,318	\$44,980	\$20,399	\$19,678
Revenue	–	–	–	–	\$2,400,000	\$2,400,000	\$2,400,000
Total Costs as % of Revenue	–	–	–	–	1.87%	0.85%	0.82%
Locality Revenue	–	–	–	–	\$74,193,162	\$74,193,162	\$74,193,162
Total Costs as % of Locality Revenue	–	–	–	–	0.06%	0.03%	0.03%

Source: OSHA.

Note: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-22 shows the costs and impacts for a model fire department with 40 responders.

Table VI-22. Costs and Impacts for a Model Fire Department with 40 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$197	\$197	\$197	\$197
Establishment of Service(s) Capability	\$8,269	\$1,177	\$969	\$0	\$8,269	\$1,177	\$969
Risk Management Plan	\$1,837	\$262	\$215	\$787	\$2,625	\$1,049	\$1,003
Medical/Fitness Requirements	\$17,562	\$2,500	\$2,059	\$1,575	\$19,137	\$4,075	\$3,634
Training	\$134	\$19	\$16	\$6,991	\$7,125	\$7,010	\$7,007
Facility Preparedness & PPE	\$1,044	\$149	\$122	\$5,584	\$6,628	\$5,733	\$5,707
Vehicle Preparedness & Operations	\$388	\$55	\$45	\$1,861	\$2,249	\$1,917	\$1,907
Pre-Incident Planning	\$3,580	\$510	\$420	\$0	\$3,580	\$510	\$420
SOPs	\$3,580	\$510	\$420	\$0	\$3,580	\$510	\$420
Incident Management System Development	\$931	\$133	\$109	\$0	\$931	\$133	\$109
Emergency Incident Operations	\$653	\$93	\$77	\$0	\$653	\$93	\$77
Post Incident Analysis	\$0	\$0	\$0	\$1,641	\$1,641	\$1,641	\$1,641
ER Program Evaluation	\$0	\$0	\$0	\$3,654	\$3,654	\$3,654	\$3,654
Total	\$37,978	\$5,407	\$4,452	\$22,291	\$60,269	\$27,698	\$26,743
Revenue	–	–	–	–	\$4,800,000	\$4,800,000	\$4,800,000
Total Costs as % of Revenue	–	–	–	–	1.26%	0.58%	0.56%
Locality Revenue	–	–	–	–	\$148,386,324	\$148,386,324	\$148,386,324
Total Costs as % of Locality Revenue	–	–	–	–	0.04%	0.02%	0.02%

Source: OSHA.

Note: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-23 shows the costs and impacts for a model emergency medical services entity with five responders.

Table VI-23. Costs and Impacts for a Model Emergency Medical Services ESO with 5 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$87	\$87	\$87	\$87
Establishment of Service(s) Capability	\$2,886	\$411	\$338	\$0	\$2,886	\$411	\$338
Risk Management Plan	\$653	\$93	\$77	\$272	\$926	\$365	\$349
Medical/Fitness Requirements	\$3,257	\$464	\$382	\$490	\$3,747	\$954	\$872
Training	\$20	\$3	\$2	\$1,605	\$1,625	\$1,608	\$1,607
Facility Preparedness & PPE	\$65	\$9	\$8	\$1,126	\$1,191	\$1,136	\$1,134
Vehicle Preparedness & Operations	\$197	\$28	\$23	\$656	\$852	\$684	\$679
Pre-Incident Planning	\$1,171	\$167	\$137	\$0	\$1,171	\$167	\$137
SOPs	\$1,171	\$167	\$137	\$0	\$1,171	\$167	\$137
Incident Management System Development	\$328	\$47	\$38	\$0	\$328	\$47	\$38
Emergency Incident Operations	\$226	\$32	\$27	\$0	\$226	\$32	\$27
Post Incident Analysis	\$0	\$0	\$0	\$527	\$527	\$527	\$527
ER Program Evaluation	\$0	\$0	\$0	\$1,229	\$1,229	\$1,229	\$1,229
Total	\$9,974	\$1,420	\$1,169	\$5,992	\$15,966	\$7,412	\$7,162
Revenue	–	–	–	–	\$629,171	\$629,171	\$629,171
Total Costs as % of Revenue	–	–	–	–	2.54%	1.18%	1.14%
Locality Revenue	–	–	–	–	\$19,450,079	\$19,450,079	\$19,450,079
Total Costs as % of Locality Revenue	–	–	–	–	0.08%	0.04%	0.04%

Source: OSHA.

Note: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-24 shows the costs and impacts for a model emergency medical services entity with 30 responders.

Table VI-24. Costs and Impacts for a Model Emergency Medical Services ESO with 30 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$103	\$103	\$103	\$103
Establishment of Service(s) Capability	\$3,246	\$462	\$381	\$0	\$3,246	\$462	\$381
Risk Management Plan	\$721	\$103	\$85	\$309	\$1,030	\$412	\$394
Medical/Fitness Requirements	\$10,661	\$1,518	\$1,250	\$567	\$11,228	\$2,085	\$1,817
Training	\$25	\$4	\$3	\$9,420	\$9,444	\$9,423	\$9,423
Facility Preparedness & PPE	\$61	\$9	\$7	\$1,291	\$1,352	\$1,300	\$1,298
Vehicle Preparedness & Operations	\$213	\$30	\$25	\$731	\$944	\$761	\$756
Pre-Incident Planning	\$1,405	\$200	\$165	\$0	\$1,405	\$200	\$165
SOPs	\$1,405	\$200	\$165	\$0	\$1,405	\$200	\$165
Incident Management System Development	\$365	\$52	\$43	\$0	\$365	\$52	\$43
Emergency Incident Operations	\$256	\$37	\$30	\$0	\$256	\$37	\$30
Post Incident Analysis	\$0	\$0	\$0	\$644	\$644	\$644	\$644
ER Program Evaluation	\$0	\$0	\$0	\$1,464	\$1,464	\$1,464	\$1,464
Total	\$18,359	\$2,614	\$2,152	\$14,527	\$32,887	\$17,141	\$16,680
Revenue	–	–	–	–	\$2,036,290	\$2,036,290	\$2,036,290
Total Costs as % of Revenue	–	–	–	–	1.62%	0.84%	0.82%
Locality Revenue	–	–	–	–	\$62,949,486	\$62,949,486	\$62,949,486
Total Costs as % of Locality Revenue	–	–	–	–	0.05%	0.03%	0.03%

Source: OSHA.

Note: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-25 shows costs and impacts for a model SSE with two SSWs in the 20 to 99 employee size class.

Table VI-25. Costs and Impacts for a Model SSE with 2 SSWs in NAICS 488410 Motor Vehicle Towing, 20–99 Employee Size Class

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Emergency Services Provided	\$51	\$7	\$6	\$0	\$51	\$7	\$6
Medical Screening - Initial	\$70	\$10	\$8	\$0	\$70	\$10	\$8
Medical Screening - Annual	\$0	\$0	\$0	\$35	\$35	\$35	\$35
Fatigue Management Plan	\$103	\$15	\$12	\$0	\$103	\$15	\$12
Decontamination SOPs	\$51	\$7	\$6	\$0	\$51	\$7	\$6
PPE Hazard Assessment	\$26	\$4	\$3	\$0	\$26	\$4	\$3
Training - Records, etc.	\$33	\$5	\$4	\$0	\$33	\$5	\$4
Training - Responder	\$0	\$0	\$0	\$564	\$564	\$564	\$564
Worker Participation	\$70	\$10	\$8	\$0	\$70	\$10	\$8
Program Evaluation	\$0	\$0	\$0	\$15	\$15	\$15	\$15
Total	\$405	\$58	\$48	\$615	\$1,020	\$672	\$662
Revenue	–	–	–	–	\$3,332,254	\$3,332,254	\$3,332,254
Total Costs as % of Revenue	–	–	–	–	0.03%	0.02%	0.02%

Source: OSHA.

Notes: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-26 shows costs and impacts for a model SSE with five SSWs in the 20 to 99 employee size class.

Table VI-26. Costs and Impacts for a Model SSE with 5 SSWs in NAICS 488410 Motor Vehicle Towing, 20–99 Employee Size Class

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Emergency Services Provided	\$51	\$7	\$6	\$0	\$51	\$7	\$6
Medical Screening – Initial	\$176	\$25	\$21	\$0	\$176	\$25	\$21
Medical Screening - Annual	\$0	\$0	\$0	\$88	\$88	\$88	\$88
Fatigue Management Plan	\$103	\$15	\$12	\$0	\$103	\$15	\$12
Decontamination SOPs	\$51	\$7	\$6	\$0	\$51	\$7	\$6
PPE Hazard Assessment	\$26	\$4	\$3	\$0	\$26	\$4	\$3
Training - Records, etc.	\$33	\$5	\$4	\$0	\$33	\$5	\$4
Training - Responder	\$0	\$0	\$0	\$1,410	\$1,410	\$1,410	\$1,410
Worker Participation	\$176	\$25	\$21	\$0	\$176	\$25	\$21
Program Evaluation	\$0	\$0	\$0	\$15	\$15	\$15	\$15
Total	\$617	\$88	\$72	\$1,513	\$2,130	\$1,601	\$1,586
Revenue	–	–	–	–	\$3,332,254	\$3,332,254	\$3,332,254
Total Costs as % of Revenue	–	–	–	–	0.06%	0.05%	0.05%

Source: OSHA based on Census (2015), BEA (2018).

Notes: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

Table VI-27 shows costs and impacts for a model SSE with 10 SSWs in the 20 to 99 employee size class.

Table VI-27. Costs and Impacts for a Model SSE with 10 SSWs in NAICS 488410 Motor Vehicle Towing, 20–99 Employee Size Class

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Emergency Services Provided	\$51	\$7	\$6	\$0	\$51	\$7	\$6
Medical Screening - Initial	\$352	\$50	\$41	\$0	\$352	\$50	\$41
Medical Screening - Annual	\$0	\$0	\$0	\$176	\$176	\$176	\$176
Fatigue Management Plan	\$103	\$15	\$12	\$0	\$103	\$15	\$12
Decontamination SOPs	\$51	\$7	\$6	\$0	\$51	\$7	\$6
PPE Hazard Assessment	\$26	\$4	\$3	\$0	\$26	\$4	\$3
Training - Records, etc.	\$33	\$5	\$4	\$0	\$33	\$5	\$4
Training - Responder	\$0	\$0	\$0	\$2,820	\$2,820	\$2,820	\$2,820
Worker Participation	\$352	\$50	\$41	\$0	\$352	\$50	\$41
Program Evaluation	\$0	\$0	\$0	\$15	\$15	\$15	\$15
Total	\$969	\$138	\$114	\$3,011	\$3,980	\$3,149	\$3,125
Revenue	–	–	–	–	\$3,332,254	\$3,332,254	\$3,332,254
Total Costs as % of Revenue	–	–	–	–	0.12%	0.09%	0.09%

Source: OSHA based on Census (2015), BEA (2018).

Notes: Figures may not add to totals due to rounding. Costs are annualized over a 10-year time horizon.

VII. Federal Rules That May Duplicate, Overlap or Conflict with the Draft Standard

The Regulatory Flexibility Act (RFA) requires that the Agency’s “initial regulatory flexibility analysis...identif[y], to the extent practicable, [] all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule.” 5 U.S.C. 603(b)(5). (Separately, the OSH Act does not apply to “working conditions” of workers with respect to which another federal agency has “exercise[d] statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health.” 29 U.S.C. 653(b)(1).)

As discussed earlier in this document, OSHA established a National Advisory Committee on Occupational Safety and Health (NACOSH) subcommittee of subject matter experts to develop draft regulatory language to be considered for a proposed rule to protect emergency responders. OSHA has identified several federal rules and guidelines that address emergency responders. Below, the agency discusses whether these rules and guidelines would duplicate, overlap, or conflict with the draft regulatory language.

Other Federal Agencies

The first set of federal rules or guidelines that OSHA identified are regulations promulgated by the Nuclear Regulatory Commission (NRC). NRC fire protection regulations specify requirements for fire brigades at nuclear reactor facilities. See 10 CFR 50.48 and Appendix R.III(H)-(I).

OSHA and the NRC have a Memorandum of Understanding (MOU) pursuant to which the NRC has authority and responsibility for hazards related to radioactive materials, including facility conditions that could affect the safety of radioactive materials by, for example, causing a fire. Under the MOU, OSHA has authority and responsibility for industrial safety and health hazards not related to the use of radioactive materials. MOU (Sept. 6, 2013). Thus, pursuant to the MOU, the draft standard would apply at nuclear reactor facilities to the extent it covers hazards not related to the use of radioactive materials.

The second set of federal rules or guidelines that OSHA identified are regulations promulgated by the Federal Aviation Administration (FAA). The FAA establishes requirements for aircraft rescue and firefighting. (14 CFR 139.315, .317, .319)

Pursuant to section 4(b)(1) of the OSH Act, 29 USC 653(b)(1), and the Supreme Court’s decision in *Chao v. Mallard Bay Drilling, Inc.*, 534 U.S. 235 (2002), OSHA’s regulations are preempted if they conflict with an exercise of authority by another federal agency to address working conditions under that agency’s jurisdiction. Therefore, to the extent the

FAA has exercised authority to regulate emergency response activities covered by the draft standard that fall under FAA jurisdiction, the draft standard would be preempted.

The third set of federal rules or guidelines that OSHA identified are standards and a practice model put out by the National Highway Transportation Safety Administration (NHTSA), part of the Department of Transportation (DOT). NHTSA establishes standards for EMS providers and EMS training curriculums.

There would be no conflict between OSHA’s draft standard and the NHTSA standards and practice model because the NHTSA standards and practice model recommend practices but do not carry the force of law. Such non-mandatory guidelines do not constitute rules that would duplicate, overlap, or conflict with a rule as outlined in the draft standard. *Cf. Ensign-Bickford Co. v. OSHRC*, 717 F.2d 1419, 1421 (D.C. Cir. 1983) (agency regulates working conditions only if it “implements [a] regulatory apparatus”); *Marshall v. Northwest Orient Airlines, Inc.*, 574 F.2d 119, 122 (2d Cir. 1978) (“sister agency must actually be exercising a power to regulate safety conditions”). There would also be no conflict because OSHA’s draft standard would be performance-based and is intended to ensure that employers adopt and implement practices and training requirements that are consistent with the NHTSA standards.

The fourth set of federal rules or guidelines that OSHA identified apply to the mining industry which is regulated by the Mine Safety and Health Administration (MSHA). MSHA regulations have extensive provisions for emergency incidents in mines including the enhanced emergency response and rescue requirements established by the Mine Improvement and New Emergency Response Act of 2006 (MINER Act).

Upon the creation of MSHA in 1977, OSHA and MSHA entered into an interagency agreement to delineate authority between them. The agreement stipulates that OSHA does not have jurisdiction where MSHA regulations apply. As such, there is no conflict between OSHA’s draft standard and MSHA’s emergency response regulations.

OSHA Standards

The final set of federal rules or guidelines that OSHA identified are existing OSHA standards. As noted in the introduction section above, there are some OSHA standards that already cover emergency response activities. The existing standards and the draft Emergency Response standard do not conflict or overlap. They are, instead, complementary. Employers that are covered only by one or more of the existing standards would not be covered by the draft standard. However, if the employer also provides other emergency services not covered by another existing standard (apart from 29 CFR 1910.156, which the draft standard would replace), then the employer would

need to comply with the draft standard for those services. The health and safety of the employees would benefit from the additional protections afforded by the draft standard.

VIII. Regulatory Options and Alternatives

This section describes regulatory alternatives OSHA is considering. The total costs of the provisions in the draft standard are summarized in Table VIII-1. OSHA presents a number of alternatives in this section but welcomes suggestions from the SERs of additional alternatives. The total cost of each potential regulatory alternative developed by OSHA thus far is summarized in Table VIII-2.

Table VIII-1. Total Cost Summary by Provision - All ESOs

	One-Time	Annual	Total (One-Time Plus Annual)
	Undiscounted	Undiscounted	Discounted - 3%
Total Fire and Ambulance ESOs			
ERP	\$8,425,050	\$2,675,253	\$3,662,926
Establishment of Service(s) Capability	\$108,849,790	\$0	\$12,760,516
Org RMP	\$24,414,233	\$10,358,600	\$13,220,693
Medical/Fitness Requirements	\$273,272,044	\$220,643,447	\$252,679,267
Training	\$1,537,495	\$182,175,899	\$182,356,140
Facility Preparedness & PPE	\$11,477,130	\$79,794,192	\$81,139,662
Vehicle Preparedness & Operations	\$5,477,628	\$24,729,328	\$25,371,473
Pre-Incident Planning	\$47,694,857	\$0	\$5,591,292
SOPs	\$47,694,857	\$0	\$5,591,292
Incident Management System Development	\$12,364,664	\$0	\$1,449,516
Emergency Incident Operations	\$8,547,743	\$0	\$1,002,056
Post Incident Analysis	\$0	\$21,843,787	\$21,843,787
ERP Program Evaluation	\$0	\$49,665,823	\$49,665,823
Total	\$549,755,490	\$591,886,330	\$656,334,444

Source: OSHA.

¹ Costs are discounted using a ten-year time horizon.

Note: Figures in rows may not add to totals due to rounding.

Table VIII-2. Costs for Regulatory Alternatives

Alternative	One-Time	Annual	Total (One-Time Plus Annual)	Difference from Draft Standard
	Undiscounted	Undiscounted	Discounted - 3%	Discounted - 3%
Draft Standard	\$549,755,490	\$591,886,330	\$656,334,444	\$0
1. Exempt all ESOs whose responders are all volunteers	\$353,650,747	\$395,111,992	\$436,570,648	-\$219,763,796

Table VIII-2. Costs for Regulatory Alternatives

Alternative	One-Time	Annual	Total (One-Time Plus Annual)	Difference from Draft Standard
	Undiscounted	Undiscounted	Discounted - 3%	Discounted - 3%
2a. Exempt all volunteer ESOs if the population served is ≤ 2,500	\$548,877,470	\$591,323,633	\$655,668,817	-\$665,627
2b. Exempt all volunteer ESOs if the population served is ≤ 5,000	\$547,208,323	\$590,128,394	\$654,277,903	-\$2,056,541
2c. Exempt all volunteer ESOs if the population served is ≤ 10,000	\$526,461,891	\$573,743,065	\$635,460,459	-\$20,873,985
2d. Exempt all volunteer ESOs if the population served is ≤ 25,000	\$421,448,790	\$480,689,140	\$530,095,795	-\$126,238,649
2e. Exempt all volunteer ESOs if the population served is ≤ 50,000	\$385,094,259	\$443,036,664	\$488,181,459	-\$168,152,985
3a. Remove the requirement for initial medical surveillance	\$349,612,264	\$591,886,330	\$632,871,552	-\$23,462,892
3b. Remove the requirement for periodic medical surveillance	\$549,755,490	\$418,879,807	\$483,327,922	-\$173,006,522
3c1. Require periodic medical surveillance every two years	\$549,755,490	\$418,879,807	\$571,109,556	-\$85,224,888
3c2. Require periodic medical surveillance every three years	\$549,755,490	\$418,879,807	\$552,621,091	-\$103,713,353
4. Medical surveillance not full NFPA 1582	\$519,734,006	\$565,935,351	\$626,864,032	-\$29,470,412
4a. Medical surveillance would not include an immunological component	\$517,599,630	\$560,497,570	\$621,176,037	-\$35,158,407
4b. Medical surveillance would not include cancer screening.	\$549,755,490	\$564,525,560	\$628,973,675	-\$27,360,770
4c. Medical surveillance would not include cardiopulmonary tests.	\$522,473,415	\$585,187,426	\$646,437,249	-\$9,897,195
4d. Medical surveillance questionnaire	\$369,626,587	\$436,180,460	\$479,511,972	-\$176,822,473
5a. Remove requirements to assess fitness for duty	\$549,755,490	\$564,473,680	\$628,921,794	-\$27,412,650
5b1. Assess fitness for duty every two years	\$549,755,490	\$564,473,680	\$642,830,676	-\$13,503,769
5b2. Assess fitness for duty every three years	\$549,755,490	\$564,473,680	\$639,901,203	-\$16,433,241
6a. Remove requirements for health and fitness programs	\$532,867,135	\$574,997,974	\$637,466,259	-\$18,868,186
6b. Remove requirements for behavioral health and wellness programs	\$549,755,490	\$588,550,410	\$652,998,524	-\$3,335,920
7. Remove the requirement to maintain a confidential health database/health file	\$544,180,092	\$591,886,330	\$655,680,838	-\$653,607
8. Reduce initial firefighter training	\$549,755,490	\$573,998,508	\$638,446,622	-\$17,887,822
9. Remove requirements that responders have certain professional qualifications	\$549,755,490	\$587,743,227	\$652,191,341	-\$4,143,103
10. Remove requirements that equipment meet specified design and manufacturing requirements	\$549,755,490	\$588,598,576	\$653,046,690	-\$3,287,754
11. Remove the requirement for PPE to be compliant with consensus standards	\$549,188,864	\$591,886,330	\$656,268,018	-\$66,426
12. Remove certain groups of ESOs from the requirement to meet particular provisions of the standard [a]	[a]	[a]	[a]	[a]
Alternatives Addressing Skilled Support Employers				
13. Exclude all or some types of SSEs from the scope of the standard [a]	[a]	[a]	[a]	[a]
14a. Remove the requirement for physical performance and fitness for duty evaluations for SSWs [a]	[a]	[a]	[a]	[a]

Table VIII-2. Costs for Regulatory Alternatives

Alternative	One-Time	Annual	Total (One-Time Plus Annual)	Difference from Draft Standard
	Undiscounted	Undiscounted	Discounted - 3%	Discounted - 3%
14b1. Assess SSW fitness for duty every two years [a]	[a]	[a]	[a]	[a]
14b2. Assess SSW fitness for duty every three years [a]	[a]	[a]	[a]	[a]
15a. Remove the requirement for pre-incident training for SSWs [a]	[a]	[a]	[a]	[a]
15b. Reduce the required training for SSWs [a]	[a]	[a]	[a]	[a]
16 Delete or reduce the requirements for worker participation for SSWs	[b]	[b]	[b]	[b]
17. Create a new subsection for disaster site workers and move applicable SSE requirements into it [Not modeled]	[b]	[b]	[b]	[b]
18. Increase or decrease the level of specification in the standard for various elements	[b]	[b]	[b]	[b]
19. Include requirements from other OSHA standards in the draft Emergency Response standard.	[b]	[b]	[b]	[b]

Source: OSHA.

Notes:

[a] Total cost savings not estimated but alternative would be burden reducing.

[b] Total cost impacts not estimated but alternative would likely result in no changes to total costs.

Figures may not add to totals due to rounding.

Alternatives Addressing the Scope of the Draft Standard:

These alternatives would alter the scope of the draft standard, removing some of the ESOs (and associated responders) shown in the industry profile in Section V. One-time costs have been annualized over 10 years using a 3 percent discount rate.

Alternative 1: Exempt ESOs whose responders are all volunteers.

Under this alternative, all-volunteer ESOs in state-plan states that cover volunteers would be completely exempt from the rule. This alternative would reduce annual costs from \$656.3 million to \$436.6 million; a cost savings of \$219.8 million per year.

Alternatives 2(a) – 2(e): Exclude all-volunteer ESOs from the draft standard based on the size of the population served.

These alternatives would exempt all-volunteer ESOs if the population served is under a certain threshold. For the purposes of this analysis, OSHA estimated the cost reduction based on the following population thresholds: less than or equal to 2,500; 5,000; 10,000; 25,000; or 50,000. While OSHA believes that volunteer (uncompensated) responders should be afforded the same coverage as compensated (paid/career) responders to the extent that state laws permit, the agency is sensitive to the fact that some or all of the proposed provisions may be economically infeasible for certain small volunteer ESOs. OSHA welcomes comment on this issue, whether smaller

ESOs should be partially or entirely exempt from the rule, and what a reasonable threshold might be where ESOs would no longer be exempt.

As discussed in Section V, OSHA used data from Part 1 of Firehouse Magazine’s (2018) 2017 National Run Survey to estimate the population served by fire departments. OSHA drew from data on the number of firefighters at each department in the NFPA registry, whether these departments were all-volunteer, and whether they were located in a state plan state. The estimates of the number of all-volunteer firefighting ESOs in state plan states are shown in Table VIII-3 and the number of responders at these ESOs are shown in Table VIII-4. While OSHA has estimated the costs for all-volunteer emergency medical ESOs and responders, and these costs are included in the cost reduction reported for each alternative in 2(a) – 2(e), detailed data on the number of emergency medical ESOs and responders serving very small communities are not available, and therefore are not presented here. As a practical matter, volunteer emergency medical operations are a magnitude smaller in scale than firefighting, with fewer than 10 percent of the responders and fewer than 5 percent of the ESOs.

Table VIII-3. Total Volunteer Public State-Plan State ESOs in Scope by Estimated Population Served

Employment Size Class	Total	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Number of ESOs						
Fire Departments						
<25	2,435	12	99	864	2,435	2,435
25-49	2,052	0	0	0	1,580	2,052
50-99	569	0	0	0	0	473
100-249	164	0	0	0	0	0
250-499	15	0	0	0	0	0
500+	2	0	0	0	0	0
Total	5,237	12	99	864	4,015	4,960
Emergency Medical Services						
<25	122	0	0	4	20	25
25-49	34	0	0	1	6	7
50-99	21	0	0	1	3	4
100-249	13	0	0	0	2	3
250-499	4	0	0	0	1	1
500+	8	0	0	0	1	2
Total	202	0	1	7	34	42
Total						
<25	2,557	12	99	868	2,455	2,460
25-49	2,086	0	0	1	1,586	2,059
50-99	590	0	0	1	3	477
100-249	177	0	0	0	2	3
250-499	19	0	0	0	1	1
500+	10	0	0	0	1	2
Total	5,439	12	100	871	4,049	5,002
Percentage of Total ESOs						

Table VIII-3. Total Volunteer Public State-Plan State ESOs in Scope by Estimated Population Served

Employment Size Class	Total	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Fire Departments						
<25	100%	0.5%	4%	35%	100%	100%
25-49	100%	0%	0%	0%	77%	100%
50-99	100%	0%	0%	0%	0%	83%
100-249	100%	0%	0%	0%	0%	0%
250-499	100%	0%	0%	0%	0%	0%
500+	100%	0%	0%	0%	0%	0%
Total	100%	0%	2%	16%	77%	95%
Emergency Medical Services						
<25	100%	0%	0%	4%	17%	21%
25-49	100%	0%	0%	4%	17%	21%
50-99	100%	0%	0%	4%	17%	21%
100-249	100%	0%	0%	4%	17%	21%
250-499	100%	0%	0%	4%	17%	21%
500+	100%	0%	0%	4%	17%	21%
Total	100%	0%	0%	4%	17%	21%
Total						
<25	100%	0%	4%	34%	96%	96%
25-49	100%	0%	0%	0%	76%	99%
50-99	100%	0%	0%	0%	1%	81%
100-249	100%	0%	0%	0%	1%	1%
250-499	100%	0%	0%	1%	4%	5%
500+	100%	0%	0%	3%	13%	17%
Total	100%	0%	2%	16%	74%	92%

Sources: OSHA derived from USFA, 2020; NAEMT, 2014; BLS, 2019; U.S. Census, 2015; Firehouse Magazine, 2018.

Note: Figures may not add to totals due to rounding.

Table VIII-4. Total Volunteer Public State-Plan State Responders in Scope by Estimated Population Served

Employment Size Class	Total	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Number of Responders						
Firefighters						
<25	41,687	12	400	10,013	41,687	41,687
25-49	66,640	0	0	0	47,866	66,640
50-99	35,990	0	0	0	0	27,911
100-249	22,486	0	0	0	0	0
250-499	4,618	0	0	0	0	0
500+	1,258	0	0	0	0	0
Total	172,679	12	400	10,013	89,553	136,238
Ambulance Responders						
<25	1,347	7	23	221	1,015	1,262

Table VIII-4. Total Volunteer Public State-Plan State Responders in Scope by Estimated Population Served

Employment Size Class	Total	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
25-49	1,367	7	23	224	1,031	1,281
50-99	1,640	8	28	269	1,236	1,537
100-249	2,103	11	36	345	1,585	1,970
250-499	1,393	7	24	229	1,050	1,305
500+	5,704	29	97	936	4,299	5,344
Total	13,555	68	231	2,224	10,216	12,699
Total						
<25	43,034	19	423	10,234	42,702	42,949
25-49	68,007	7	23	224	48,897	67,921
50-99	37,630	8	28	269	1,236	29,447
100-249	24,589	11	36	345	1,585	1,970
250-499	6,011	7	24	229	1,050	1,305
500+	6,962	29	97	936	4,299	5,344
Total	186,234	80	631	12,237	99,769	148,936
Percentage of Total Responders						
Firefighters						
<25	100%	0%	1%	24%	100%	100%
25-49	100%	0%	0%	0%	72%	100%
50-99	100%	0%	0%	0%	0%	78%
100-249	100%	0%	0%	0%	0%	0%
250-499	100%	0%	0%	0%	0%	0%
500+	100%	0%	0%	0%	0%	0%
Total	100%	0%	0%	6%	52%	79%
Ambulance Responders						
<25	100%	1%	2%	16%	75%	94%
25-49	100%	1%	2%	16%	75%	94%
50-99	100%	1%	2%	16%	75%	94%
100-249	100%	1%	2%	16%	75%	94%
250-499	100%	1%	2%	16%	75%	94%
500+	100%	1%	2%	16%	75%	94%
Total	100%	1%	2%	16%	75%	94%
Total						
<25	100%	0%	1%	24%	99%	100%
25-49	100%	0%	0%	0%	72%	100%
50-99	100%	0%	0%	1%	3%	78%
100-249	100%	0%	0%	1%	6%	8%
250-499	100%	0%	0%	4%	17%	22%
500+	100%	0%	1%	13%	62%	77%
Total	100%	0%	0%	7%	54%	80%

Sources: OSHA derived from USFA, 2020; NAEMT, 2014; BLS, 2019; U.S. Census, 2015; Firehouse Magazine, 2018.

Note: Figures may not add to totals due to rounding.

Alternatives 2(a) – 2(e) are as follows:

2(a) Exempt volunteer ESOs if the population served is less than or equal to 2,500

This alternative would completely exempt the ESOs shown in Table VIII-3 that serve a population less than or equal to 2,500. This alternative results in 12 ESOs with 80 responders being exempted and reduces the total annual costs of this draft standard from \$656.3 million to \$655.7 million; a reduction of \$0.7 million per year.

2(b) Exempt volunteer ESOs if the population served is less than or equal to 5,000

This alternative would completely exempt the ESOs shown in Table VIII-3 that serve a population less than or equal to 5,000. This alternative results in 100 ESOs with 631 responders being exempted and reduces the total annual costs of this draft standard from \$656.3 million to \$654.3 million; a reduction of \$2.1 million per year.

2(c) Exempt volunteer ESOs if the population served is less than or equal to 10,000

This alternative would completely exempt the ESOs shown in Table VIII-3 that serve a population less than or equal to 10,000. This alternative results in 871 ESOs with 12,237 responders being exempted and reduces the total annual costs of this draft standard from \$656.3 million to \$635.5 million; a reduction of \$20.9 million.

2(d) Exempt volunteer ESOs if the population served is less than or equal to 25,000

This alternative would completely exempt the ESOs shown in Table VIII-3 that serve a population less than or equal to 25,000. This alternative results in 4,049 ESOs with 99,769 responders being exempted and reduces the total annual costs of this draft standard from \$656.3 million to \$530.1 million; a reduction of \$126.2 million.

2(e) Exempt volunteer ESOs if the population served is less than or equal to 50,000

This alternative would completely exempt the ESOs shown in Table VIII-3 that serve a population less than or equal to 50,000. This alternative results in 5,002 ESOs with 148,936 responders being exempted and reduces the total annual costs of this draft standard from \$656.3 million to \$488.2 million; a reduction of \$168.2 million per year.

Table VIII-5 summarizes the costs of each provision for ESOs under each population threshold.

Table VIII-5. Change in Costs if State Plan Public Volunteer ESOs Serving Certain Populations Removed using a 3 Percent Discount Rate

Provision	Total Cost of Draft Standard - State Plan Public Volunteer ESOs	Reduction in Costs if ESOs Serving Certain Populations Removed					
		Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000	All
Fire Departments							
ERP	\$1,299,342	-\$8,812	-\$24,271	-\$200,509	-\$1,007,139	-\$1,234,573	-\$1,299,342
Establishment of Service(s) Capability	\$4,716,260	-\$32,584	-\$89,748	-\$741,425	-\$3,662,254	-\$4,479,959	-\$4,716,260
Organization Risk Management Program	\$4,880,499	-\$33,599	-\$92,544	-\$764,521	-\$3,781,766	-\$4,627,782	-\$4,880,499
Medical/Fitness Requirements	\$74,215,248	-\$77,121	-\$366,299	-\$5,835,876	-\$44,617,733	-\$63,337,745	-\$74,215,248
Training	\$27,965,148	-\$12,306	-\$85,548	-\$1,649,898	-\$15,072,243	-\$22,629,626	-\$27,965,148
Facility Preparedness & PPE	\$30,404,300	-\$209,008	-\$575,690	-\$4,755,860	-\$23,591,799	-\$28,903,935	-\$30,404,300
Vehicle Preparedness & Operations	\$9,352,335	-\$64,638	-\$178,037	-\$1,470,790	-\$7,238,954	-\$8,876,763	-\$9,352,335
Pre-Incident Planning	\$2,035,499	-\$13,221	-\$36,416	-\$300,842	-\$1,528,441	-\$1,911,866	-\$2,035,499
SOPs	\$2,035,499	-\$13,221	-\$36,416	-\$300,842	-\$1,528,441	-\$1,911,866	-\$2,035,499
Incident Management System Development	\$535,365	-\$3,702	-\$10,197	-\$84,236	-\$414,425	-\$508,136	-\$535,365
Emergency Incident Operations	\$370,419	-\$2,553	-\$7,033	-\$58,103	-\$287,979	-\$351,884	-\$370,419
Post Incident Analysis	\$7,921,649	-\$50,751	-\$139,788	-\$1,154,809	-\$5,915,180	-\$7,414,250	-\$7,921,649
ERP Program Evaluation	\$17,862,341	-\$115,600	-\$318,406	-\$2,630,399	-\$13,339,798	-\$16,678,634	-\$17,862,341
Subtotal	\$183,593,905	-\$637,116	-\$1,960,395	-\$19,948,109	-\$121,986,152	-\$162,867,019	-\$183,593,905
Emergency Medical Services							
ERP	\$23,720	-\$26	-\$89	-\$856	-\$3,933	-\$4,889	-\$23,720
Establishment of Service(s) Capability	\$70,309	-\$78	-\$264	-\$2,538	-\$11,658	-\$14,491	-\$70,309
Organization Risk Management Program	\$72,865	-\$81	-\$273	-\$2,631	-\$12,082	-\$15,018	-\$72,865
Medical/Fitness Requirements	\$2,031,561	-\$9,690	-\$32,677	-\$314,675	-\$1,445,285	-\$1,796,527	-\$2,031,561
Training	\$3,477,799	-\$17,483	-\$58,957	-\$567,750	-\$2,607,645	-\$3,241,371	-\$3,477,799
Facility Preparedness & PPE	\$417,829	-\$464	-\$1,566	-\$15,084	-\$69,281	-\$86,118	-\$417,829

Table VIII-5. Change in Costs if State Plan Public Volunteer ESOs Serving Certain Populations Removed using a 3 Percent Discount Rate

Provision	Total Cost of Draft Standard - State Plan Public Volunteer ESOs	Reduction in Costs if ESOs Serving Certain Populations Removed					
		Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000	All
Vehicle Preparedness & Operations	\$141,039	-\$157	-\$529	-\$5,092	-\$23,386	-\$29,069	-\$141,039
Pre-Incident Planning	\$30,718	-\$34	-\$115	-\$1,109	-\$5,093	-\$6,331	-\$30,718
SOPs	\$30,718	-\$34	-\$115	-\$1,109	-\$5,093	-\$6,331	-\$30,718
Incident Management System Development	\$7,988	-\$9	-\$30	-\$288	-\$1,325	-\$1,646	-\$7,988
Emergency Incident Operations	\$5,519	-\$6	-\$21	-\$199	-\$915	-\$1,137	-\$5,519
Post Incident Analysis	\$120,248	-\$134	-\$451	-\$4,341	-\$19,939	-\$24,784	-\$120,248
ERP Program Evaluation	\$282,630	-\$314	-\$1,060	-\$10,203	-\$46,863	-\$58,252	-\$282,630
Subtotal	\$6,712,943	-\$28,511	-\$96,146	-\$925,877	-\$4,252,497	-\$5,285,966	-\$6,712,943
Total							
ERP	\$1,323,062	-\$8,838	-\$24,360	-\$201,365	-\$1,011,072	-\$1,239,462	-\$1,323,062
Establishment of Service(s) Capability	\$4,786,569	-\$32,662	-\$90,012	-\$743,963	-\$3,673,913	-\$4,494,450	-\$4,786,569
Organization Risk Management Program	\$4,953,364	-\$33,680	-\$92,817	-\$767,152	-\$3,793,848	-\$4,642,800	-\$4,953,364
Medical/Fitness Requirements	\$76,246,810	-\$86,811	-\$398,976	-\$6,150,551	-\$46,063,018	-\$65,134,272	-\$76,246,810
Training	\$31,442,947	-\$29,789	-\$144,505	-\$2,217,648	-\$17,679,888	-\$25,870,997	-\$31,442,947
Facility Preparedness & PPE	\$30,822,129	-\$209,473	-\$577,256	-\$4,770,944	-\$23,661,080	-\$28,990,053	-\$30,822,129
Vehicle Preparedness & Operations	\$9,493,374	-\$64,794	-\$178,566	-\$1,475,882	-\$7,262,340	-\$8,905,832	-\$9,493,374
Pre-Incident Planning	\$2,066,217	-\$13,255	-\$36,532	-\$301,951	-\$1,533,534	-\$1,918,197	-\$2,066,217
SOPs	\$2,066,217	-\$13,255	-\$36,532	-\$301,951	-\$1,533,534	-\$1,918,197	-\$2,066,217
Incident Management System Development	\$543,353	-\$3,711	-\$10,227	-\$84,524	-\$415,749	-\$509,783	-\$543,353
Emergency Incident Operations	\$375,938	-\$2,560	-\$7,054	-\$58,302	-\$288,894	-\$353,021	-\$375,938
Post Incident Analysis	\$8,041,898	-\$50,885	-\$140,239	-\$1,159,150	-\$5,935,119	-\$7,439,034	-\$8,041,898
ERP Program Evaluation	\$18,144,971	-\$115,914	-\$319,466	-\$2,640,602	-\$13,386,661	-\$16,736,886	-\$18,144,971
Total	\$190,306,848	-\$665,627	-\$2,056,541	-\$20,873,985	-\$126,238,649	-\$168,152,985	-\$190,306,848

Source: OSHA.

Table VIII-5. Change in Costs if State Plan Public Volunteer ESOs Serving Certain Populations Removed using a 3 Percent Discount Rate

Provision	Total Cost of Draft Standard - State Plan Public Volunteer ESOs	Reduction in Costs if ESOs Serving Certain Populations Removed					
		Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000	All

Note: Figures may not add to totals due to rounding.

Alternatives Addressing Medical Surveillance:

These alternatives would alter whether medical surveillance is required, the frequency with which it is required, or what elements of medical surveillance are required. The total costs for each component of the medical surveillance requirement are summarized in Table VIII-6 below. The table shows the total number of responders of each type, the estimated percentage that would receive each test (taking into account factors such as sex, age, the indications for an exam (e.g., smoking history), and the recommended frequency of an exam), the unit cost, average unit cost (i.e., percent receiving multiplied by the unit cost), total cost, weighted average non-compliance rate for ESOs of all sizes, and compliance-adjusted total cost.

OSHA's draft standard as written assumes that ESOs will follow the NFPA 1582 standard's requirements for medical screening and surveillance. It is possible that some types of medical screening and surveillance may have a minimal impact on protecting responders. If this were determined to be the case, some tests or group of tests could remain as recommended by the consensus standard but not required under an OSHA standard. OSHA has grouped different medical screening and surveillance elements into "modules" to show potential cost decreases, but any individual tests detailed in Table VIII-6 could be included or excluded. OSHA welcomes input from the SERs on which individual types of screening and surveillance, if any, could be included or excluded.

Table VIII-6. Summary of Costs of Each Medical Surveillance Component [a]

Exam	Responders	% Receiving [b]	Unit Cost (for All Potential Exams)	Average Unit Cost (% Receiving × Unit Cost)	Total Annualized Cost	Average Non-Compliance Rate	Compliance-Adjusted Cost
Fire Departments							
Initial Medical Surveillance							
General Health Assessment [c]	524,489	100%	\$239	\$239	\$14,717,943	72.3%	\$10,641,766
Cardiopulmonary Function [d]	524,489	84%	\$54	\$45	\$2,779,447	72.3%	\$2,009,671
Immunological [e]	524,489	100%	\$53	\$53	\$3,275,979	72.3%	\$2,368,687
<i>Initial Subtotal</i>	<i>524,489</i>	<i>97%</i>	<i>\$347</i>	<i>\$338</i>	<i>\$20,773,369</i>	<i>72.3%</i>	<i>\$15,020,125</i>
Periodic Medical Surveillance							
General Health Assessment [f]	524,489	100%	\$197	\$197	\$103,266,752	72.3%	\$74,666,727
Cardiopulmonary Function [d]	524,489	33%	\$54	\$18	\$9,264,823	72.3%	\$6,698,904
Cancer Screening [g]	524,489	10%	\$679	\$70	\$36,661,367	72.3%	\$26,507,896
Immunological [h]	524,489	11%	\$497	\$57	\$29,783,363	72.3%	\$21,534,775
<i>Periodic Subtotal</i>	<i>524,489</i>	<i>24%</i>	<i>\$1,427</i>	<i>\$341</i>	<i>\$178,976,306</i>	<i>72.3%</i>	<i>\$129,408,302</i>
Medical Surveillance Total							
Initial and Periodic Total	524,489	38%	\$1,773	\$679	\$199,749,676	72.3%	\$144,428,427
Emergency Medical Services							
Initial Medical Surveillance							
General Health Assessment [c]	365,025	100%	\$223	\$223	\$9,525,636	61.4%	\$5,853,186
Cardiopulmonary Function [d]	365,025	84%	\$54	\$45	\$1,934,393	61.4%	\$1,188,620
Immunological [e]	365,025	100%	\$53	\$53	\$2,279,961	61.4%	\$1,400,960
<i>Initial Subtotal</i>	<i>365,025</i>	<i>97%</i>	<i>\$330</i>	<i>\$321</i>	<i>\$13,739,990</i>	<i>61.4%</i>	<i>\$8,442,767</i>
Periodic Medical Surveillance							
General Health Assessment [f]	365,025	81%	\$180	\$147	\$53,528,305	61.4%	\$32,891,362
Cancer Screening [g]	365,025	1%	\$679	\$4	\$1,387,991	61.4%	\$852,874
Immunological [h]	365,025	9%	\$497	\$44	\$16,036,644	61.4%	\$9,853,984
<i>Periodic Subtotal</i>	<i>365,025</i>	<i>14%</i>	<i>\$1,410</i>	<i>\$194</i>	<i>\$70,952,939</i>	<i>61.4%</i>	<i>\$43,598,220</i>
Medical Surveillance Total							
Initial and Periodic Total	365,025	30%	\$1,740	\$515	\$84,692,930	61.4%	\$52,040,987
Total/Average							
Initial Medical Surveillance							
General Health Assessment [c]	889,514	100%	\$232	\$232	\$24,243,579	68.0%	\$16,494,953
Cardiopulmonary Function [d]	889,514	84%	\$54	\$45	\$4,713,840	67.8%	\$3,198,291

Table VIII-6. Summary of Costs of Each Medical Surveillance Component [a]

Exam	Responders	% Receiving [b]	Unit Cost (for All Potential Exams)	Average Unit Cost (% Receiving × Unit Cost)	Total Annualized Cost	Average Non-Compliance Rate	Compliance-Adjusted Cost
Immunological [e]	889,514	100%	\$53	\$53	\$5,555,941	67.8%	\$3,769,648
<i>Initial Subtotal</i>	<i>889,514</i>	<i>97%</i>	<i>\$340</i>	<i>\$331</i>	<i>\$34,513,360</i>	<i>68.0%</i>	<i>\$23,462,892</i>
Periodic Medical Surveillance							
General Health Assessment [f]	889,514	93%	\$190	\$176	\$156,795,057	68.6%	\$107,558,090
Cardiopulmonary Function [d]	889,514	19%	\$54	\$10	\$9,264,823	72.3%	\$6,698,904
Cancer Screening [g]	889,514	6%	\$679	\$43	\$38,049,357	71.9%	\$27,360,770
Immunological [h]	889,514	10%	\$497	\$52	\$45,820,008	68.5%	\$31,388,759
<i>Periodic Subtotal</i>	<i>889,514</i>	<i>20%</i>	<i>\$1,422</i>	<i>\$281</i>	<i>\$249,929,246</i>	<i>69.2%</i>	<i>\$173,006,522</i>
Medical Surveillance Total							
General Health Assessment	889,514	97%	\$422	\$409	\$181,038,636	68.5%	\$124,053,042
Cardiopulmonary Function	889,514	52%	\$108	\$56	\$13,978,664	70.8%	\$9,897,195
Cancer Screening	889,514	6%	\$679	\$43	\$38,049,357	71.9%	\$27,360,770
Immunological	889,514	19%	\$550	\$105	\$51,375,948	136.4%	\$35,158,407
Initial and Periodic Total	889,514	35%	\$1,762	\$612	\$284,442,605	69.1%	\$196,469,414

Sources: OSHA based on CMS, 2018a, CMS, 2018b, CDC, 2018, Joshi, 2014, HAP, 2016, NFPA, 2017, and NFPA, 2018.

Notes:

- [a] Figures may not add to totals due to rounding. Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.
- [b] The estimated percentage of responders receiving each test incorporates factors such as gender, age, the indications for an exam (e.g., smoking history), and the recommended frequency of an exam.
- [c] Includes employee time, an office visit, audiogram, and chest X-ray.
- [d] Includes an EKG and spirometry.
- [e] Includes TB and Hepatitis C screening.
- [f] Includes employee time, an office visit, and an audiogram.
- [g] Includes mammography, colonoscopy, lung cancer screening use low-dose CT, blood tests, urinalysis, and PSA testing.
- [h] Includes TB screening, HIV screening, immunizations (influenza, TDAP, MMR, varicella, Hepatitis A/B), and immunization administration.

Alternatives 3(a) – 3(e): Exclude medical surveillance requirement or reduce the frequency for which it is required.

3(a) Remove the requirement for initial medical surveillance

This alternative would completely remove the initial medical surveillance requirement, reducing the annualized costs by \$23.5 million for all ESOs. This alternative would maintain periodic medical surveillance, meaning that responders would receive medical surveillance screenings annually starting one year after the effective date.

3(b) Remove the requirement for periodic medical surveillance

This would completely remove the periodic medical surveillance requirement, reducing the annualized costs by \$173.0 million for all ESOs.

3(c) Revise frequency for periodic medical surveillance

The costs of OSHA's draft standard are calculated assuming that responders would receive periodic medical surveillance every year. These alternatives would reduce the frequency of periodic medical surveillance from annual to every two or three years.

3(c)(1) Require periodic medical surveillance every two years.

This alternative would reduce the annualized costs by \$85.2 million.

3(c)(2) Require periodic medical surveillance every three years.

This alternative would reduce the annualized costs by \$103.7 million.

Alternatives 4(a) – 4(d): Remove certain elements of the medical surveillance requirement.

There are various ways in which the medical surveillance provisions could be modified. For purposes of discussion, OSHA has grouped them into several modules: (a) immunological, (b) cancer surveillance, (c) cardiopulmonary screening, and (d) the base physical exam.

4(a) Medical surveillance would not include an immunological component.

This alternative would eliminate HIV and TB screening, as well as immunizations for various illnesses. This would reduce annualized costs by \$35.2 million.

4(b) Medical surveillance would not include cancer-screening elements.

This alternative would remove the requirements for any tests that serve to screen for various types of cancers and would reduce the cost of periodic testing by \$27.4 million annualized.

4(c) Medical surveillance would not include cardiopulmonary test elements.

This alternative would remove the requirement for EKG and spirometry exams. This would reduce annualized costs by \$9.9 million.

4(d) Substitute a medical questionnaire for routine medical exams.

This alternative would substitute a questionnaire for a routine in-person physical, saving money by reducing medical professionals' time. This would reduce annualized costs by \$176.8 million.

Alternatives Addressing Fitness and Health and Wellness:

Alternatives 5(a) – 5(b): Remove or reduce requirements for assessing fitness for duty

These alternatives would remove certain fitness and health elements from the standard or reduce the frequency with which fitness for duty is evaluated.

5(a) Remove requirements to assess fitness for duty

This alternative would completely remove the requirement that ESOs assess responders for fitness for duty, reducing the annualized costs by \$27.4 million for all ESOs.

5(b) Revise frequency for assessing fitness for duty

These alternatives would reduce the frequency with which fitness for duty must be evaluated from annually to every two or three years. It is possible that fitness for duty does not change enough on a yearly basis to necessitate annual assessments and that assessing fitness for duty every two or three years may be adequate to detect any health problems that put responders at risk.

5(b)(1) Assess fitness for duty every two years.

Revising the fitness for duty assessment requirement to once every two years would reduce the total annualized costs by \$13.5 million.

5(b)(2) Assess fitness for duty every three years.

Revising the fitness for duty assessment requirement to once every three years would reduce the total annualized costs by \$16.4 million.

Alternative 6: Remove requirements for health and wellness programs

These requirements could be removed in whole or in part.

6(a) Remove requirements for all health and wellness programs

This alternative would remove all requirements for programs addressing worker health and wellness. Removing this requirement would reduce the total annualized costs by \$18.9 million.

6(b) Remove requirements for behavioral health and wellness programs

This alternative would remove only the behavioral health and wellness requirement, reducing the total annualized costs by \$3.3 million.

Alternative Addressing the Health Database or Health File:

Alternative 7: Remove the requirement to maintain a confidential health database/health file

This alternative would completely remove the requirement to maintain a confidential health database and health file, reducing annualized costs by \$0.7 million.

Alternative Addressing Training:

Alternative 8: Reduce training requirements

This alternative would scale back the initial training requirements to the basic NFPA volunteer firefighting training of 110 hours, as opposed to the estimated 335 hours in the main cost analysis of the draft standard. This would reduce the annualized costs by \$17.9 million.

Alternative Addressing Professional Qualifications:

Alternative 9: Remove requirements that responders have certain professional qualifications

This alternative would completely remove the requirement to ensure that employees meet professional qualifications. Removing this requirement would reduce the annualized costs by \$4.1 million for all ESOs.

Alternatives Addressing Equipment:

Alternative 10: Remove requirements that equipment meet specified design and manufacturing requirements.

OSHA is assuming that removing this requirement would reduce the unit cost of equipment preparedness to 90 percent of the unit costs under the draft standard. This is estimated to save annualized costs of \$3.3 million.

Alternative 11: Remove the requirement for PPE to be compliant with consensus standards.

This alternative is assumed to reduce the unit cost of PPE provision to 90 percent of the unit costs under the draft standard. This is estimated to reduce annualized costs by approximately \$66,000. It should be noted that the PPE would still need to conform to any applicable OSHA standard.

Alternative Removing Certain Requirements for Certain Sized ESOs:

Alternative 12: Remove certain groups of ESOs from the requirement to meet particular provisions of the standard.

As laid out in Table VIII-6, the draft standard could be customized to combine elements of some of the alternatives in 1 through 11. For example, if volunteer fire departments serving populations below 10,000 were exempted from the medical and fitness requirements, this would save annualized costs of \$6.1 million. OSHA welcomes comment on what requirements could be eliminated for which ESOs.

Alternatives Addressing Skilled Support Employer (SSE) Requirements

As discussed in the Description and Estimate of Affected Small and Other Entities, due to the difficulties of estimating the scope of the Skilled Support universe, the agency is currently lacking profile information on Skilled Support Employers, making it impossible to develop aggregate cost estimates of the alternatives. Nonetheless, alternatives to some of the requirements for SSEs merit discussion and consideration. The unit costs for these provision are laid out in detail in Table VI-8.

Alternative 13: Exclude all or some types of SSEs from the scope of the standard.

The SSE provisions have the potential to have significant impact on a broad number of employers in a wide range of industries, and OSHA has yet to be able to identify quantifiable data regarding the number of injuries, illnesses or fatalities among workers providing skilled support services at emergency incident scenes. Therefore, the benefits of the SSE provisions are undetermined at this time. The cost per establishment is estimated to vary by size, but even for the smallest establishments, compliance with the draft standard is estimated to take at least 8 hours of employers' time, plus additional time for each Skilled Support Worker.

Alternative 14: Delete or reduce the requirement for annual fitness for duty medical screenings for SSWs.

The draft provision requires annual fitness for duty medical screenings for each employee designated as a Skilled Support Worker (SSW) to evaluate the worker's physical and emotional fitness to perform the assigned duties. As set out in Table VI-8, these screenings are estimated to cost \$51.31 per SSW for the initial unit cost of the medical screening part of the fitness for duty

screening and \$25.66 annually thereafter. These screenings are estimated to take an hour of a worker's time.

14(a) Remove the requirement for fitness for duty medical screenings for SSWs.

14(b) Assess SSW fitness for duty:

- (1) Every two years
- (2) Every three years

Alternative 15: Delete or reduce the requirement for pre-incident training for SSWs.

The draft standard requires that SSWs receive at least 7.5 hours of training for working at emergency incident scenes. OSHA estimates the unit cost per SSW to be \$281.96.

15(a) Remove the requirement for pre-incident training for SSWs.

15(b) Reduce the required time for training for SSWs.

Alternative 16: Delete or reduce the requirements for worker participation for SSWs.

The draft standard requires that SSWs participate in the development of the SSE's Emergency Response program including (among other things) consulting in the development and updating of the plan, providing input regarding workplace modifications, participating in SSE facility inspections and incident investigations, and being encouraged to report safety and health concerns. This alternative would remove or reduce these requirements. OSHA could consider retaining some parts of this draft provision (for example, encouraging the reporting of safety and health concerns) but remove others. OSHA has preliminarily estimated that this provision will be a one-time cost of between one and three hours depending on the size of the SSE.

Alternative 17: Create a new subsection for disaster site workers and move applicable SSE requirements into it.

Many of the draft SSE provisions are more applicable to operating at a disaster site, such as a tornado, rather than directly assisting an ESO at an individual emergency incident scene, such as an overturned truck trapping victims in a car. This alternative considers whether to maintain the provisions as drafted; reduce the requirements to the minimum needed for SSWs operating at individual incident scenes (similar to HAZWOPR); or reorganizing the current draft provisions to maintain those most applicable to assisting ESOs in individual incidents, and create a new subsection for the provisions more applicable to disaster sites.

Alternative Addressing Level of Specification in the Draft Standard:

Alternative 18: Increase or decrease the level of specification in the standard for various elements.

OSHA believes this potential standard should be a performance-based program standard. Many of the provisions in the draft standard set performance-based objectives for the employer to meet, leaving the employer to determine which means are best suited to meet the objectives for compliance with the provisions. However, the draft standard, as written by the NACOSH subcommittee, has varying levels of specification for provisions addressing similar requirements. The provisions for ESOs are drafted as more performance-based, while the Skilled Support Employer (SSE) provisions are more prescriptive. There was no specific intent by the subcommittee to draft the sections differently; it is how it unfolded during the development of the draft standard. In this alternative, OSHA is asking whether either of these two directions should be taken:

- a) The draft provisions for ESOs could be written to be more prescriptive, similar to the current draft provisions for SSE; or
- b) The draft provisions for SSEs could be written in a more performance-based manner, similar to the current draft provisions for ESOs.

The costs or cost savings for these alternatives are difficult to quantify, but OSHA believes that ultimately many of the same elements would be required under any language. Nonetheless, there may be cost advantages to presenting the requirements for different types of affected employers in a consistent manner. Less prescriptive programmatic approaches to compliance allow employers greater flexibility in complying with OSHA rules. This allows employers to find innovative approaches to meeting OSHA requirements that can save the employer money while still accomplishing the goal of the requirement.

IX. References

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X. Appendices

Definitions and Acronyms

The following definitions are based on definitions from several NFPA standards related to emergency responders, definitions used in other OSHA standards, other agencies such as DHS, and used by affected entities. OSHA uses them in the draft standard and in developing the estimate of costs.

Advanced life support. Emergency medical treatment beyond basic life support level.

Basic Life Support. Emergency medical treatment performed to sustain life that includes cardiopulmonary resuscitation, control of bleeding, treatment of shock, stabilization of injuries and wounds, and first aid.

Community vulnerability and risk assessment. The process of identifying, quantifying, and prioritizing the potential and known vulnerabilities of the overall community; the structures, inhabitants, infrastructure, organizations, hazardous conditions or processes. The assessment should include human created vulnerabilities and natural disasters.

Control Zones. The areas at an incident that are designated based upon safety and the degree of hazard. Control zones may be designated as cold, warm, hot, or no-entry.

Cold zone. The area immediately outside the boundary of the established warm zone where responders are safe from adverse effects of a fire, toxic chemicals, carcinogens, etc. The cold zone typically contains the command post and other such support functions as are deemed necessary to control the incident.

Hot zone. The area immediately surrounding the physical location of a fire, hazardous material release, etc., having a boundary that extends far enough away to protect responders outside the hot zone from being directly exposed to the harmful effects of a fire, toxic chemicals, carcinogens, etc.

No-entry zone. A control area designated to keep out responders, due to the presence of dangers such as imminent hazard(s), potential collapse, or the need to preserve the scene.

Warm zone. The control area immediately outside the boundary of the hot zone having a boundary that extends far enough from the hot zone to protect responders inside the warm zone from the adverse effects of a fire, toxic chemicals, carcinogens, etc. The warm zone typically is where responder and equipment decontamination and hot zone support take place.

Emergency incident. Any situation to which an Emergency Service Organization or Skilled Support Employer responds in order to deliver emergency services, such as intervention for rescue, fire suppression, EMS, special operations, and other forms of hazard control and mitigation.

Emergency Medical Service. The provision of patient treatment, such as basic life support, advanced life support, other pre-hospital procedures, and may include transport.

Emergency Service Organization. An organization whose employees, as part of their regularly assigned duties, respond to emergency incidents to provide service such as rescue, fire suppression, emergency medical care, special operations and other forms of hazard control and mitigation. It does not include organizations solely engaged in law enforcement, crime prevention, etc.

Employee. For the purposes of this standard, an employee may be referred to as a responder or a Skilled Support Worker (SSW).

Employer. For the purposes of this standard, an employer may be referred to as an Emergency Service Organization (ESO) or a Skilled Support Employer (SSE).

Facility vulnerability and risk assessment. The process of identifying, quantifying, and prioritizing the potential and known vulnerabilities of the overall facility, the structures, inhabitants, infrastructure, hazardous conditions, or processes. The assessment should include human created vulnerabilities and natural disasters.

Fire Suppression. The activities involved in controlling and extinguishing fires.

Firefighting, Aircraft. The control or extinguishment of a fire adjacent to or involving an aircraft following ground accidents/incidents.

Firefighting, Marine. The firefighting action taken to prevent, control, or extinguish fire involved in or adjacent to a marine vessel and rescue actions for occupants. Typically includes vessels operated by the ESO to provide the firefighting or rescue service.

Firefighting, Proximity. Specialized firefighting operations that can include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of radiant heat as well as conductive and convective heat.

Firefighting, Structural. The activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, rail cars, marine vessels, aircraft, or like properties that are involved in a fire or emergency situation.

Firefighting, Wildland. The activities of fire suppression and property conservation in woodlands, forests, grasslands, brush, prairies, and other such vegetation, or any combination of vegetation, that is involved in a fire situation but is not within buildings or structures.

Firefighting, Incipient. Firefighting performed inside or outside of an enclosed structure or building when the fire has not progressed beyond incipient stage.

Firefighting, Defensive. The mode of manual fire control in which the only fire suppression activities taken are limited to those required to keep a fire from extending from one area to another.

Firefighting, Offensive. The mode of manual fire control in which manual fire suppression activities are concentrated on reducing the size of a fire to accomplish extinguishment.

Firefighting, Interior Structural. The physical activity of fire suppression, rescue, or both, inside of buildings or enclosed structures that are involved in a fire beyond the incipient stage.

Firefighting, Exterior. Offensive firefighting performed outside of an enclosed structure when the fire is beyond the incipient stage. Exterior firefighting may include fighting structure fires from outside of the structure, containing, controlling, and extinguishing exterior fires involving site-specific hazards, such as flammable and combustible liquid spills or leaks, liquefied petroleum gas releases, and electrical substations.

Foreseeable. An action or event that is predictable or should be anticipated.

Gross decontamination. The process during which the amount of surface contaminants and foreign materials on personal protective equipment are removed or significantly reduced. Typically accomplished by physical means involving dislodging or displacement such as: water or liquid rinse, brushing, scraping, wiping off, etc.

Health and Safety Officer. An individual assigned and authorized by the ESO as the manager of the safety and health program. This individual can also be the incident safety officer or that role can be assigned to another individual as a separate function.

Incident Commander. Typically the most senior or most experienced responder at the emergency incident, who is responsible for overall management of the incident and the safety of all responders involved in the incident. Responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources.

Incident Safety Officer. A responder who is a member of the command staff operating on an incident scene, who is responsible for monitoring and assessing safety hazards and unsafe situations and for developing measures for ensuring personnel safety.

Incident scene. The physical location of the emergency incident.

Incipient Stage. Refers to the severity of a fire where the progression is in the early stage and has not developed beyond that which can be extinguished using portable fire extinguishers or small diameter hose lines flowing up to 125 gpm (473L/min).

Incident Action Plan. The objectives reflecting the overall incident strategy, tactics, risk management, and responder safety that are developed by the Incident Commander. Incident action plans are updated throughout the incident.

Law Enforcement Agency. An organization responsible for the prevention, investigation, apprehension, or detention of individuals suspected or accused of committing a crime or breaking an established law.

Living area. The room(s) or area(s) of the ESO's facility where responders may cook, eat, relax, read, study, watch television, complete paperwork or data entry, etc. Examples include: "day room," kitchen/dining area, classroom, office, TV room, etc. Exclusions include: maintenance shop, utility and storage areas, etc.

Mayday. An emergency procedure term used to signal an individual is in distress, is in need of assistance, and is unable to self-rescue. Typically used when safety or life is in jeopardy.

Mutual aid, mutual aid agreement (also known as an interagency agreement, automatic aid, fire protection agreement). A written agreement between ESOs, and between ESOs and jurisdictions, that they will assist one another upon request by furnishing personnel, equipment, and expertise in a specified manner. (NFPA 1710) A written plan for reciprocal assistance between ESOs.

Near miss. An unplanned event that did not result in injury, illness, or damage; but had the potential to do so. Only a fortunate break in the chain of events prevented an injury, fatality or damage. Also known as a close call, narrow escape, near collision, near hit, etc.

Non-Governmental Organization. A non-profit, voluntary citizens group that is organized on a local, national or international level and is not part of any government. Examples include: American Red Cross, faith-based organizations, etc.

Personal Protective Equipment (PPE) (also known as personal protective ensemble). Clothing and equipment worn and utilized to prevent or minimize exposure to serious workplace injuries and illnesses. Examples include items such as: gloves, safety glasses and goggles, safety shoes and boots, earplugs and muffs, hard hats and helmets, respirators and self-contained breathing apparatus, protective coats and pants, hoods, coveralls, vests and full body suits.

Post-Emergency Incident Activity. Any activity that occurs after the ESO Incident Commander releases the Skilled Support Employer's assets, or terminates the ESO's command.

Pre-Incident Plan (PIP). A document developed by gathering general and detailed data that is used by responding personnel in effectively managing emergencies for the protection of occupants, responding personnel, property, and the environment. This plan is developed before an incident occurs and is intended to be used during an incident to aid in mitigation.

Qualified Healthcare Professional. A physician, physician’s assistant, occupational health nurse, or other medical professional who possesses a license, professional qualifications or certification required to practice medicine in the ESO’s or SSE’s jurisdiction, and who is knowledgeable in the physical requirements needed to perform the duties designated to responders or SSWs.

Rapid Intervention Team (RIT) (also known as Rapid Intervention Crew, Firefighter Assist and Search Team). A team of responders dedicated solely to serve as a stand-by rescue team available for the immediate search and rescue of any missing, trapped, injured or unaccounted for responder(s). This team is typically fully equipped with the appropriate personal protective equipment, and specialized rescue equipment needed based on the specifics of the operation that is underway. A RIT is not the same as “2-in, 2-out” which is a separate, specific requirement (§1910.134(g)(4) and sub-paragraph (n)(4)(iii) of the proposed regulatory text).

Responder. An employee who is, or will be, assigned to perform duties at emergency incidents.

Risk-benefit analysis. A decision made by a responder based on a hazard identification and situation assessment that weighs the likely risks against the benefits to be gained for taking those risks.

Safety officer. A generic title given to a responder within an ESO who performs the functions of a health and safety officer, incident safety officer, or who serves as an assistant to a person in either of those positions.

Size-up. An initial and on-going evaluation of the incident scene for the purpose of determining the scope and nature of operational activities to determine mitigation strategies.

Skilled Support Employer (SSE). An employer that has a primary function other than providing an emergency service, but who designates one or more employees to provide a service at the scene of an emergency incident. Examples include, but are not limited to, employers that provide cranes, heavy duty wrecker/rotator tow vehicles, construction equipment, and utility services (gas, water, electricity, etc.), public health employers, medical personnel, etc.

Skilled Support Worker (SSW). An employee of a Skilled Support Employer who is skilled in certain tasks or disciplines that can support an ESO (such as operators of heavy duty wrecker/rotator tow vehicles, mechanized earth moving or digging equipment, crane and hoisting equipment, qualified health care professionals, technical experts, etc.), and who is needed to perform immediate emergency support work that cannot reasonably be performed in a timely

fashion by an ESO responder, and who will be or may be exposed to the hazards at an emergency incident scene.

Sleeping area. Designated room(s) or area(s) of the ESO’s facility where responders sleep in beds; sometimes referred to as a dormitory, bunkroom, sackroom, etc.

Spontaneous Unaffiliated Volunteer (SUV): A responder from a non-dispatched ESO, or a skilled or unskilled person who voluntarily arrives at an incident scene or disaster site to provide assistance, after the establishment of control/command by the ESO. This person is typically not affiliated with any disaster support group, such as the American Red Cross, Community Emergency Response Teams (CERT), or other Non-Governmental Organization (NGO)). This person may or may not have training.

Standard Operating Procedure (SOP). A Standard Operating Procedure is an organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions. When used as guidelines, SOPs can be varied due to operational need in the performance of designated operations or actions.

Workplace Emergency Response Team. A group of employees who prepare for and respond to emergency incidents in the workplace. May also be known as industrial, emergency or facility fire brigade; industrial fire dept.; emergency response team; fire team; plant emergency organization; etc.

EMS – Emergency Medical Service

ER – Emergency Response

ESO – Emergency Service Organization

HSO – Health and Safety Officer

IAP – Incident Action Plan

ICS – Incident Command System

IDLH – Immediately Dangerous to Life or Health

IMS – Incident Management System

ISO – Incident Safety Officer

NGO – Non-Governmental Organization

PIP – Pre-Incident Plan

PPE – Personal Protective Equipment

RIT – Rapid Intervention Team

SCBA – Self-Contained Breathing Apparatus

SOP – Standard Operating Procedure

SSE – Skilled Support Employer

SSW – Skilled Support Worker

SUV – Spontaneous Unaffiliated Volunteer

Detailed Firefighter Profile

This appendix contains the detailed data for fire departments and firefighters by state as originally presented in the USFA (2020) fire registry database. The tables show various breakdowns by whether the state is a state plan state, department type, firefighter type, and organization type. These tables include all departments and firefighters, regardless of whether they are in scope for the draft standard, including federal departments and public departments in non-state plan states.

Table X-1. shows summary data by state. These summary statistics include: whether the state is a state plan state, whether volunteers are covered by the state plan,²³ the estimated number of departments, estimated number of stations, and estimated number of firefighters, by firefighter type.

Table X-2. shows the same information as Table X-1. but only for public organizations. For the sake of this analysis, public organizations are those that are within OSHA’s jurisdiction and include State government, local government (includes career, combination, and volunteer), transportation authorities or airport fire departments, and “other” departments.

Table X-3. through Table X-7. provide an overview of the estimated number of firefighters by organization type, with one table for each responder type (career, volunteer, etc.). Note that the subtotals for state plan states in these tables include all state plan states, regardless of whether volunteers are covered.

²³ OSHA researched the laws of each state plan state and made a preliminary determination as to whether volunteers were covered, not covered, or the text did not clearly indicate whether volunteers were covered. OSHA then used best professional judgment to make the final determination for those state plans that did not explicitly state whether volunteers were covered.

Table X-1. Fire Department and Firefighter Summary Statistics by State - All Organization Types

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
State Plan States									
Alaska	Yes	Yes	157	287	1,313	2,606	914	180	881
Arizona	Yes	Yes	251	683	8,318	1,645	1,423	1,439	1,081
California	Yes	Yes	878	3,771	43,230	11,230	5,701	7,111	3,159
Connecticut	Yes	No	252	544	4,306	10,456	876	274	1,929
Hawaii	Yes	Yes	12	112	2,421	191	0	154	0
Illinois	Yes	Yes	1,108	1,856	15,606	14,619	11,089	985	1,574
Indiana	Yes	Yes	764	1,213	8,187	14,657	3,632	874	1,397
Iowa	Yes	Yes	732	813	2,029	14,125	2,233	110	838
Kentucky	Yes	No	683	1,070	4,510	14,576	1,865	259	1,563
Maine	Yes	Yes	339	502	1,278	3,006	5,352	104	932
Maryland	Yes	No	262	585	8,242	19,780	140	619	11,424
Michigan	Yes	Yes	965	1,492	7,192	4,446	15,274	1,122	849
Minnesota	Yes	Yes	725	920	2,025	8,888	8,919	169	502
Nevada	Yes	Yes	87	326	2,859	2,353	1,149	465	300
New Jersey	Yes	Yes	716	1,290	7,095	28,913	786	724	4,032
New Mexico	Yes	No	246	510	2,337	4,528	162	227	734
New York	Yes	Yes	1,664	2,674	17,583	83,322	339	3,067	12,198
North Carolina	Yes	No	1,087	1,732	10,836	28,520	4,440	595	2,725
Oregon	Yes	Yes	305	713	4,061	6,278	866	646	1,342
Puerto Rico	Yes	No	7	100	1,815	59	0	97	25
South Carolina	Yes	Yes	443	1,159	6,939	11,003	1,425	451	1,799
Tennessee	Yes	No	634	1,459	7,852	12,548	2,418	549	2,304
Utah	Yes	Yes	191	353	2,575	2,415	1,724	492	578

Table X-1. Fire Department and Firefighter Summary Statistics by State - All Organization Types

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
Vermont	Yes	No	204	250	360	3,400	1,418	20	509
Virginia	Yes	No	552	1,142	11,530	22,124	765	1,282	6,728
Washington	Yes	Yes	401	1,284	8,733	7,935	3,353	1,104	901
Wyoming	Yes	No	113	253	581	2,579	777	52	262
State Plan State Subtotal	27	17	13,778	27,093	193,813	336,202	77,040	23,171	60,566
Non-State Plan States									
Alabama	No	No	810	1,310	6,396	13,977	805	284	2,756
Arkansas	No	No	688	1,209	2,919	10,236	1,842	134	1,496
Colorado	No	No	325	863	6,361	6,681	569	800	638
Delaware	No	No	58	86	413	3,661	63	28	1,330
District of Columbia	No	No	3	39	1,489	0	14	307	0
Florida	No	No	475	1,802	28,675	5,764	1,310	3,218	1,656
Georgia	No	No	464	1,613	13,331	9,369	1,823	575	1,208
Guam	No	No	2	13	304	0	0	39	0
Idaho	No	No	196	469	2,125	2,644	1,535	742	498
Kansas	No	No	505	870	3,403	6,966	3,605	205	466
Louisiana	No	No	426	1,376	6,408	9,678	1,029	381	2,032
Massachusetts	No	No	363	795	12,341	1,597	4,993	768	390
Mississippi	No	No	414	756	3,519	7,828	667	111	1,266
Missouri	No	No	775	1,503	7,070	12,177	3,158	427	1,835
Montana	No	No	280	428	760	5,492	350	177	570
Nebraska	No	No	392	474	1,541	10,116	199	54	576
New Hampshire	No	No	213	316	1,659	1,311	3,908	163	459

Table X-1. Fire Department and Firefighter Summary Statistics by State - All Organization Types

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
North Dakota	No	No	325	377	661	7,714	525	66	653
Northern Mariana Islands	No	No	2	7	220	0	0	3	0
Ohio	No	No	1,131	1,746	14,152	14,626	12,766	717	1,857
Oklahoma	No	No	743	1,061	4,605	10,369	935	209	1,297
Pennsylvania	No	No	1,794	2,387	5,490	57,821	998	554	30,606
Rhode Island	No	No	68	152	2,258	1,381	337	140	325
South Dakota	No	No	294	346	601	7,107	174	38	506
Texas	No	No	1,510	2,895	28,889	26,784	1,926	1,817	5,198
West Virginia	No	No	409	521	945	9,357	170	67	1,916
Wisconsin	No	No	762	1,042	4,759	11,158	10,673	346	1,578
Non-State Plan States Subtotal	27	27	13,427	24,456	161,294	253,814	54,374	12,370	61,112
Total									
Total Public and Non-Public	54	17	27,205	51,549	355,107	590,016	131,414	35,541	121,678

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-2. Fire Department and Firefighter Summary Statistics by State - Public Only

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
State Plan States									
Alaska	Yes	Yes	148	266	995	2,588	759	179	809
Arizona	Yes	Yes	232	632	7,735	1,615	1,320	1,205	1,058
California	Yes	Yes	815	3,531	40,102	10,934	4,760	6,866	3,053
Connecticut	Yes	No	247	538	4,173	10,357	876	274	1,929
Hawaii	Yes	Yes	8	91	2,014	187	0	119	0
Illinois	Yes	Yes	1,086	1,833	15,282	14,407	10,972	972	1,530
Indiana	Yes	Yes	720	1,160	8,062	13,777	3,139	839	1,277
Iowa	Yes	Yes	719	800	1,900	13,897	2,233	109	805
Kentucky	Yes	No	675	1,050	4,270	14,546	1,838	249	1,549
Maine	Yes	Yes	338	501	1,265	3,006	5,352	104	932
Maryland	Yes	No	253	569	7,936	19,780	116	604	11,424
Michigan	Yes	Yes	948	1,471	7,016	4,368	15,182	1,044	806
Minnesota	Yes	Yes	709	901	1,984	8,741	8,639	167	491
Nevada	Yes	Yes	84	319	2,721	2,353	1,149	464	294
New Jersey	Yes	Yes	706	1,278	6,837	28,888	754	707	4,032
New Mexico	Yes	No	243	504	2,245	4,504	162	151	725
New York	Yes	Yes	1,592	2,584	17,215	81,123	279	3,005	11,596
North Carolina	Yes	No	1,046	1,659	10,180	27,527	4,310	540	2,660
Oregon	Yes	Yes	298	699	3,248	6,266	808	627	1,336
Puerto Rico	Yes	No	6	99	1,804	59	0	97	25
South Carolina	Yes	Yes	432	1,143	6,654	10,894	1,425	450	1,783
Tennessee	Yes	No	625	1,430	7,569	12,486	2,303	540	2,292
Utah	Yes	Yes	185	343	2,409	2,415	1,710	161	270

Table X-2. Fire Department and Firefighter Summary Statistics by State - Public Only

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
Vermont	Yes	No	196	239	301	3,270	1,400	20	489
Virginia	Yes	No	516	1,067	10,236	21,539	517	1,172	6,662
Washington	Yes	Yes	397	1,259	8,306	7,935	3,353	1,088	901
Wyoming	Yes	No	104	241	459	2,438	722	50	156
State Plan State Subtotal	27	17	13,328	26,207	182,918	329,900	74,078	21,803	58,884
Non-State Plan States									
Alabama	No	No	808	1,285	6,097	13,977	785	280	2,756
Arkansas	No	No	685	1,203	2,873	10,218	1,842	133	1,496
Colorado	No	No	312	842	5,949	6,665	509	782	636
Delaware	No	No	58	86	413	3,661	63	28	1,330
District of Columbia	No	No	2	37	1,446	0	0	307	0
Florida	No	No	460	1,757	27,835	5,692	1,295	3,187	1,642
Georgia	No	No	452	1,585	12,904	9,247	1,823	570	1,182
Guam	No	No	2	13	304	0	0	39	0
Idaho	No	No	191	378	1,272	2,600	1,535	134	498
Kansas	No	No	502	863	3,272	6,966	3,605	203	466
Louisiana	No	No	422	1,369	6,264	9,658	1,029	377	2,032
Massachusetts	No	No	358	789	12,112	1,567	4,993	723	390
Mississippi	No	No	409	749	3,375	7,787	662	109	1,265
Missouri	No	No	766	1,492	6,929	12,103	3,119	419	1,832
Montana	No	No	275	420	697	5,456	332	175	570
Nebraska	No	No	391	473	1,511	10,116	199	54	576
New Hampshire	No	No	207	310	1,544	1,282	3,880	163	458

Table X-2. Fire Department and Firefighter Summary Statistics by State - Public Only

State	State Plan State	Volunteers Covered by State Plan States	Number of Departments	Number of Stations	Active Firefighters - Career	Active Firefighters - Volunteer	Active Firefighters - Paid per Call	Non-Firefighting Civilian	Non-Firefighting Volunteer
North Dakota	No	No	317	367	505	7,619	522	49	647
Northern Mariana Islands	No	No	2	7	220	0	0	3	0
Ohio	No	No	1,091	1,703	14,044	13,731	12,640	716	1,761
Oklahoma	No	No	735	1,049	4,414	10,285	935	209	1,290
Pennsylvania	No	No	1,767	2,360	5,213	57,557	741	534	30,184
Rhode Island	No	No	65	148	2,172	1,381	304	133	325
South Dakota	No	No	289	341	506	7,059	174	38	496
Texas	No	No	1,483	2,836	28,103	26,478	1,877	1,769	5,123
West Virginia	No	No	408	520	915	9,357	170	67	1,916
Wisconsin	No	No	735	1,005	4,695	10,490	10,458	339	1,466
Non-State Plan States Subtotal	27	27	13,192	23,987	155,584	250,952	53,492	11,540	60,337
Total									
Total Public and Non-Public	54	17	26,520	50,194	338,502	580,852	127,570	33,343	119,221

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-3. Firefighter Summary Statistics by Active Firefighters – Career

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
State Plan States									
Alaska	0	287	0	31	410	150	92	343	995
Arizona	202	146	162	73	7,235	161	10	329	7,735
California	127	1,113	1,559	329	32,989	6,275	79	759	40,102
Connecticut	0	66	0	67	3,999	98	0	76	4,173
Hawaii	0	331	76	0	1,940	23	51	0	2,014
Illinois	10	162	43	109	15,175	0	42	65	15,282
Indiana	2	55	13	55	7,959	11	56	36	8,062
Iowa	13	116	0	0	1,900	0	0	0	1,900
Kentucky	0	156	32	52	4,100	38	104	28	4,270
Maine	0	13	0	0	1,262	2	0	1	1,265
Maryland	0	273	29	4	7,791	120	0	25	7,936
Michigan	0	136	25	15	6,774	127	110	5	7,016
Minnesota	0	25	0	16	1,880	13	57	34	1,984
Nevada	0	138	0	0	2,411	220	20	70	2,721
New Jersey	17	223	17	1	6,732	64	21	20	6,837
New Mexico	21	71	0	0	2,224	7	0	14	2,245
New York	14	247	62	45	17,028	52	108	27	17,215
North Carolina	154	476	0	26	10,049	0	41	90	10,180
Oregon	683	124	6	0	3,239	0	0	9	3,248
Puerto Rico	0	11	0	0	30	1,774	0	0	1,804
South Carolina	2	283	0	0	6,307	171	0	176	6,654
Tennessee	175	35	43	30	7,538	0	30	1	7,569

Table X-3. Firefighter Summary Statistics by Active Firefighters – Career

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Utah	0	156	0	10	2,408	0	1	0	2,409
Vermont	0	51	0	8	287	14	0	0	301
Virginia	4	1,163	35	92	10,175	0	42	19	10,236
Washington	0	122	5	300	8,030	16	129	131	8,306
Wyoming	0	53	0	69	420	31	7	1	459
State Plan States Subtotal	1,424	6,032	2,107	1,332	170,292	9,367	1,000	2,259	182,918
Non-State Plan States									
Alabama	0	299	0	0	6,038	33	11	15	6,097
Arkansas	0	46	0	0	2,828	35	0	10	2,873
Colorado	0	326	12	74	5,685	172	14	78	5,949
Delaware	0	0	0	0	413	0	0	0	413
District of Columbia	0	43	0	0	1,300	0	146	0	1,446
Florida	93	693	54	0	26,853	211	70	701	27,835
Georgia	43	384	0	0	12,781	49	0	74	12,904
Guam	0	0	0	0	0	276	28	0	304
Idaho	87	78	658	30	1,272	0	0	0	1,272
Kansas	0	131	0	0	3,210	44	18	0	3,272
Louisiana	30	114	0	0	6,163	54	22	25	6,264
Massachusetts	0	229	0	0	12,112	0	0	0	12,112
Mississippi	0	134	10	0	3,331	14	0	30	3,375
Missouri	14	127	0	0	6,926	0	0	3	6,929

Table X-3. Firefighter Summary Statistics by Active Firefighters – Career

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Montana	20	40	3	0	651	25	21	0	697
Nebraska	0	30	0	0	1,489	2	20	0	1,511
New Hampshire	29	86	0	0	1,544	0	0	0	1,544
North Dakota	17	139	0	0	497	0	8	0	505
Northern Mariana Islands	0	0	0	0	0	220	0	0	220
Ohio	53	26	15	14	13,975	1	0	68	14,044
Oklahoma	95	96	0	0	4,261	104	7	42	4,414
Pennsylvania	0	184	15	78	5,132	3	78	0	5,213
Rhode Island	23	63	0	0	2,154	0	17	1	2,172
South Dakota	0	83	12	0	504	0	2	0	506
Texas	310	452	24	0	27,746	18	174	165	28,103
West Virginia	0	30	0	0	915	0	0	0	915
Wisconsin	29	33	0	2	4,571	20	79	25	4,695
Non-State Plan States Subtotal	843	3,866	803	198	152,351	1,281	715	1,237	155,584
Total									
Total - Active Career	2,267	9,898	2,910	1,530	322,643	10,648	1,715	3,496	338,502

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-4. Firefighter Summary Statistics by Active Firefighters – Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
State Plan States									
Alaska	0	0	6	12	2,564	0	0	24	2,588
Arizona	0	0	9	21	1,489	49	0	77	1,615
California	20	0	0	276	10,267	414	0	253	10,934
Connecticut	0	27	0	72	10,320	35	0	2	10,357
Hawaii	0	0	4	0	187	0	0	0	187
Illinois	65	0	0	147	14,333	30	0	44	14,407
Indiana	796	0	0	84	13,578	30	0	169	13,777
Iowa	162	10	0	56	13,874	23	0	0	13,897
Kentucky	0	0	0	30	14,412	35	22	77	14,546
Maine	0	0	0	0	3,006	0	0	0	3,006
Maryland	0	0	0	0	19,753	0	0	27	19,780
Michigan	64	0	0	14	4,336	0	0	32	4,368
Minnesota	146	0	0	1	8,665	0	0	76	8,741
Nevada	0	0	0	0	1,753	590	0	10	2,353
New Jersey	0	0	0	25	28,635	61	0	192	28,888
New Mexico	10	14	0	0	4,434	60	0	10	4,504
New York	2,075	0	0	124	80,524	253	0	346	81,123
North Carolina	953	6	0	34	27,321	0	5	201	27,527
Oregon	0	0	12	0	6,216	0	0	50	6,266
Puerto Rico	0	0	0	0	4	50	0	5	59
South Carolina	109	0	0	0	10,006	712	0	176	10,894
Tennessee	62	0	0	0	12,347	15	14	110	12,486
Utah	0	0	0	0	2,384	0	4	27	2,415

Table X-4. Firefighter Summary Statistics by Active Firefighters – Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Vermont	31	0	0	99	3,220	0	0	50	3,270
Virginia	0	0	8	577	21,472	12	1	54	21,539
Washington	0	0	0	0	7,768	42	0	125	7,935
Wyoming	0	0	0	141	2,423	15	0	0	2,438
State Plan States Subtotal	4,493	57	39	1,713	325,291	2,426	46	2,137	329,900
Non-State Plan States									
Alabama	0	0	0	0	13,882	29	30	36	13,977
Arkansas	0	18	0	0	10,090	45	0	83	10,218
Colorado	0	0	0	16	6,468	0	0	197	6,665
Delaware	0	0	0	0	3,661	0	0	0	3,661
District of Columbia	0	0	0	0	0	0	0	0	0
Florida	57	0	0	15	5,581	44	0	67	5,692
Georgia	105	0	0	17	8,920	257	0	70	9,247
Guam	0	0	0	0	0	0	0	0	0
Idaho	44	0	0	0	2,574	18	0	8	2,600
Kansas	0	0	0	0	6,935	5	0	26	6,966
Louisiana	20	0	0	0	9,498	73	7	80	9,658
Massachusetts	30	0	0	0	1,567	0	0	0	1,567
Mississippi	41	0	0	0	7,717	29	0	41	7,787
Missouri	39	0	0	35	11,858	0	0	245	12,103
Montana	0	0	36	0	5,406	30	0	20	5,456

Table X-4. Firefighter Summary Statistics by Active Firefighters – Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Nebraska	0	0	0	0	10,095	0	21	0	10,116
New Hampshire	14	0	0	15	1,282	0	0	0	1,282
North Dakota	95	0	0	0	7,583	0	0	36	7,619
Northern Mariana Islands	0	0	0	0	0	0	0	0	0
Ohio	227	0	0	668	13,644	34	0	53	13,731
Oklahoma	34	0	12	38	10,182	30	0	73	10,285
Pennsylvania	173	0	0	91	57,420	30	0	107	57,557
Rhode Island	0	0	0	0	1,351	0	0	30	1,381
South Dakota	48	0	0	0	7,040	0	0	19	7,059
Texas	262	0	0	44	26,238	82	0	158	26,478
West Virginia	0	0	0	0	9,357	0	0	0	9,357
Wisconsin	561	0	0	107	10,404	3	0	83	10,490
Non-State Plan States Subtotal	1,750	18	48	1,046	248,753	709	58	1,432	250,952
Total									
Total - Active Volunteer	6,243	75	87	2,759	574,044	3,135	104	3,569	580,852

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-5. Firefighter Summary Statistics by Active Firefighters - Paid per Call

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
State Plan States									
Alaska	0	0	0	155	694	0	0	65	759
Arizona	20	9	54	20	1,179	57	0	84	1,320
California	72	18	701	150	4,605	74	8	73	4,760
Connecticut	0	0	0	0	876	0	0	0	876
Hawaii	0	0	0	0	0	0	0	0	0
Illinois	0	0	0	117	10,972	0	0	0	10,972
Indiana	128	0	20	345	2,992	117	0	30	3,139
Iowa	0	0	0	0	2,233	0	0	0	2,233
Kentucky	0	0	0	27	1,790	0	0	48	1,838
Maine	0	0	0	0	5,308	24	0	20	5,352
Maryland	0	0	0	24	85	0	0	31	116
Michigan	18	28	46	0	14,679	452	1	50	15,182
Minnesota	28	15	61	176	8,492	83	0	64	8,639
Nevada	0	0	0	0	149	1,000	0	0	1,149
New Jersey	0	0	0	32	754	0	0	0	754
New Mexico	0	0	0	0	136	26	0	0	162
New York	0	27	0	33	272	0	0	7	279
North Carolina	112	0	0	18	4,310	0	0	0	4,310
Oregon	40	0	18	0	788	20	0	0	808
Puerto Rico	0	0	0	0	0	0	0	0	0
South Carolina	0	0	0	0	1,344	31	0	50	1,425
Tennessee	85	0	0	30	2,303	0	0	0	2,303
Utah	0	0	14	0	1,710	0	0	0	1,710

Table X-5. Firefighter Summary Statistics by Active Firefighters - Paid per Call

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Vermont	0	0	0	18	1,390	10	0	0	1,400
Virginia	0	32	0	216	502	0	0	15	517
Washington	0	0	0	0	3,256	15	0	82	3,353
Wyoming	0	0	20	35	662	0	0	60	722
State Plan States Subtotal	503	129	934	1,396	71,481	1,909	9	679	74,078
Non-State Plan States									
Alabama	0	20	0	0	785	0	0	0	785
Arkansas	0	0	0	0	1,808	14	0	20	1,842
Colorado	0	0	0	60	464	0	0	45	509
Delaware	0	0	0	0	63	0	0	0	63
District of Columbia	0	14	0	0	0	0	0	0	0
Florida	0	0	15	0	1,295	0	0	0	1,295
Georgia	0	0	0	0	1,768	55	0	0	1,823
Guam	0	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	1,535	0	0	0	1,535
Kansas	0	0	0	0	3,605	0	0	0	3,605
Louisiana	0	0	0	0	1,029	0	0	0	1,029
Massachusetts	0	0	0	0	4,993	0	0	0	4,993
Mississippi	0	0	5	0	662	0	0	0	662
Missouri	13	26	0	0	3,119	0	0	0	3,119
Montana	0	0	18	0	329	0	3	0	332

Table X-5. Firefighter Summary Statistics by Active Firefighters - Paid per Call

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Nebraska	0	0	0	0	189	10	0	0	199
New Hampshire	28	0	0	0	3,880	0	0	0	3,880
North Dakota	3	0	0	0	442	80	0	0	522
Northern Mariana Islands	0	0	0	0	0	0	0	0	0
Ohio	83	0	0	43	12,450	67	0	123	12,640
Oklahoma	0	0	0	0	935	0	0	0	935
Pennsylvania	0	0	0	257	741	0	0	0	741
Rhode Island	0	33	0	0	304	0	0	0	304
South Dakota	0	0	0	0	161	0	13	0	174
Texas	39	0	10	0	1,877	0	0	0	1,877
West Virginia	0	0	0	0	170	0	0	0	170
Wisconsin	126	0	0	89	10,404	0	0	54	10,458
Non-State Plan States Subtotal	292	93	48	449	53,008	226	16	242	53,492
Total									
Total - Paid per Call	795	222	982	1,845	124,489	2,135	25	921	127,570

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-6. Firefighter Summary Statistics by Non-Firefighting Civilian

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
State Plan States									
Alaska	0	1	0	0	96	0	9	74	179
Arizona	20	12	200	2	1,144	23	5	33	1,205
California	1	57	164	23	4,954	1,817	5	90	6,866
Connecticut	0	0	0	0	259	14	0	1	274
Hawaii	0	35	0	0	118	0	1	0	119
Illinois	0	8	1	4	969	0	0	3	972
Indiana	2	7	2	24	836	0	2	1	839
Iowa	1	0	0	0	109	0	0	0	109
Kentucky	0	0	5	5	238	1	8	2	249
Maine	0	0	0	0	102	0	0	2	104
Maryland	0	15	0	0	568	5	0	31	604
Michigan	0	18	60	0	866	177	1	0	1,044
Minnesota	0	0	0	2	162	2	1	2	167
Nevada	0	1	0	0	440	20	0	4	464
New Jersey	0	0	0	17	690	6	0	11	707
New Mexico	5	71	0	0	147	4	0	0	151
New York	53	7	2	0	2,991	3	6	5	3,005
North Carolina	3	51	0	1	533	0	2	5	540
Oregon	7	12	0	0	627	0	0	0	627
Puerto Rico	0	0	0	0	6	91	0	0	97
South Carolina	0	1	0	0	352	90	0	8	450
Tennessee	6	0	3	0	524	15	0	1	540
Utah	0	0	0	331	161	0	0	0	161

Table X-6. Firefighter Summary Statistics by Non-Firefighting Civilian

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Vermont	0	0	0	0	19	1	0	0	20
Virginia	0	91	0	19	1,169	0	1	2	1,172
Washington	0	3	0	13	1,050	0	8	30	1,088
Wyoming	0	2	0	0	48	0	0	2	50
State Plan States Subtotal	98	392	437	441	19,178	2,269	49	307	21,803
Non-State Plan States									
Alabama	0	4	0	0	279	1	0	0	280
Arkansas	0	1	0	0	117	16	0	0	133
Colorado	0	9	3	6	723	41	2	16	782
Delaware	0	0	0	0	28	0	0	0	28
District of Columbia	0	0	0	0	300	0	7	0	307
Florida	7	24	0	0	2,860	225	3	99	3,187
Georgia	0	5	0	0	535	20	0	15	570
Guam	0	0	0	0	0	37	2	0	39
Idaho	5	1	600	2	134	0	0	0	134
Kansas	0	2	0	0	198	0	5	0	203
Louisiana	1	3	0	0	376	0	0	1	377
Massachusetts	0	45	0	0	723	0	0	0	723
Mississippi	0	1	1	0	101	0	0	8	109
Missouri	0	8	0	0	416	0	0	3	419
Montana	2	0	0	0	145	29	1	0	175
Nebraska	0	0	0	0	51	0	3	0	54
New Hampshire	0	0	0	0	163	0	0	0	163
North Dakota	0	17	0	0	40	0	9	0	49

Table X-6. Firefighter Summary Statistics by Non-Firefighting Civilian

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Northern Mariana Islands	0	0	0	0	0	3	0	0	3
Ohio	0	0	0	1	709	0	0	7	716
Oklahoma	0	0	0	0	197	12	0	0	209
Pennsylvania	0	0	0	20	530	1	3	0	534
Rhode Island	7	0	0	0	133	0	0	0	133
South Dakota	0	0	0	0	38	0	0	0	38
Texas	15	31	2	0	1,750	6	4	9	1,769
West Virginia	0	0	0	0	67	0	0	0	67
Wisconsin	1	3	0	3	339	0	0	0	339
Non-State Plan States Subtotal	38	154	606	32	10,952	391	39	158	11,540
Total									
Total - Non-Firefighting Civilian	136	546	1,043	473	30,130	2,660	88	465	33,343

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

Table X-7. Firefighter Summary Statistics by Non-Firefighting Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
State Plan States									
Alaska	0	0	0	72	791	0	0	18	809
Arizona	0	0	7	16	996	29	0	33	1,058
California	2	0	75	29	2,043	976	0	34	3,053
Connecticut	0	0	0	0	1,929	0	0	0	1,929
Hawaii	0	0	0	0	0	0	0	0	0
Illinois	0	0	0	44	1,518	3	0	9	1,530
Indiana	72	0	0	48	1,243	0	0	34	1,277
Iowa	8	0	0	25	803	2	0	0	805
Kentucky	0	0	0	14	1,538	6	0	5	1,549
Maine	0	0	0	0	932	0	0	0	932
Maryland	0	0	0	0	11,408	0	0	16	11,424
Michigan	37	0	6	0	755	50	0	1	806
Minnesota	10	0	0	1	489	0	0	2	491
Nevada	0	6	0	0	294	0	0	0	294
New Jersey	0	0	0	0	3,992	0	0	40	4,032
New Mexico	5	4	0	0	720	3	0	2	725
New York	585	0	0	17	11,524	9	0	63	11,596
North Carolina	61	0	0	4	2,658	0	0	2	2,660
Oregon	0	0	6	0	1,317	1	0	18	1,336
Puerto Rico	0	0	0	0	0	20	0	5	25
South Carolina	16	0	0	0	1,594	151	0	38	1,783
Tennessee	12	0	0	0	2,287	0	0	5	2,292
Utah	0	0	50	258	267	0	1	2	270

Table X-7. Firefighter Summary Statistics by Non-Firefighting Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Vermont	14	0	0	6	489	0	0	0	489
Virginia	0	2	0	64	6,660	2	0	0	6,662
Washington	0	0	0	0	889	0	0	12	901
Wyoming	0	0	0	106	155	0	0	1	156
State Plan States Subtotal	822	12	144	704	57,291	1,252	1	340	58,884
Non-State Plan States									
Alabama	0	0	0	0	2,731	18	0	7	2,756
Arkansas	0	0	0	0	1,480	0	0	16	1,496
Colorado	0	0	0	2	593	0	0	43	636
Delaware	0	0	0	0	1,330	0	0	0	1,330
District of Columbia	0	0	0	0	0	0	0	0	0
Florida	12	0	0	2	1,613	3	0	26	1,642
Georgia	16	0	0	10	1,152	0	0	30	1,182
Guam	0	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	494	2	0	2	498
Kansas	0	0	0	0	466	0	0	0	466
Louisiana	0	0	0	0	1,974	10	0	48	2,032
Massachusetts	0	0	0	0	390	0	0	0	390
Mississippi	1	0	0	0	1,250	0	0	15	1,265
Missouri	3	0	0	0	1,826	0	0	6	1,832
Montana	0	0	0	0	568	0	0	2	570
Nebraska	0	0	0	0	575	0	1	0	576
New Hampshire	1	0	0	0	458	0	0	0	458
North Dakota	6	0	0	0	647	0	0	0	647

Table X-7. Firefighter Summary Statistics by Non-Firefighting Volunteer

State	Contract Fire Department	Federal Government (Department of Defense)	Federal Government (Executive Branch)	Private or Industrial Fire Brigade	Local	State Government	Transportation Authority or Airport Fire Department	Other Public	Total Public
Northern Mariana Islands	0	0	0	0	0	0	0	0	0
Ohio	37	0	0	59	1,737	8	0	16	1,761
Oklahoma	2	0	2	3	1,277	0	0	13	1,290
Pennsylvania	74	3	0	345	30,166	0	0	18	30,184
Rhode Island	0	0	0	0	319	0	0	6	325
South Dakota	10	0	0	0	494	0	2	0	496
Texas	70	0	0	5	5,047	12	0	64	5,123
West Virginia	0	0	0	0	1,916	0	0	0	1,916
Wisconsin	108	0	0	4	1,461	0	0	5	1,466
Non-State Plan States Subtotal	340	3	2	430	59,964	53	3	317	60,337
Total									
Total - Non-Firefighting Volunteer	1,162	15	146	1,134	117,255	1,305	4	657	119,221

Source: OSHA derived from USFA (2020).

Notes: OSHA made determination of whether volunteers were covered in State Plan States. Subtotals for State Plan States include all State Plan States regardless of whether volunteers are covered. Table includes U.S. territories. Figures may not add to totals due to rounding.

**Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
NON-AUTOIMMUNE AND UNSPECIFIED HEMOLYTIC ANEMIAS [0]D592, D593, D594, D599, [9]2831, 2839		<5			
FALLS, LADDERS OR SCAFFOLDING [0]W11-W12, [9]881	395	10	p<0.01	190	727
MN OTHER AND UNSPECIFIED URINARY ORGANS [0]C68, [9]1893-1899	384	9	p<0.01	175	729
CAUGHT ACCIDENTALLY IN OR BETWEEN OBJECTS [0]W23, [9]918		<5			
CALCULI OF URINARY SYSTEM [0]N20-N21, [9]592, 594	313	5	p<0.05	102	731
WATER, AIR AND SPACE TRANSPORT [0]V90-V97, [9]830-845	289	12	p<0.01	149	505
MN PLEURA (80% MESOTHELIOMA IN MALES) [0]C384, [9]163		<5			
POLYARTERITIS NODOSA AND ALLIED CONDITIONS [0]M30, [9]446		<5			
ELECTROCUTION [0]W85-W87, [9]925		<5			
RAILWAY, WATER, AIR, AND SPACE TRANSPORT FATALITIES [0]V05, V15, V81, V90-V97, [9]800-807, 830-838, 840-845	249	14	p<0.01	136	418
MN MESOTHELIOMA (no codes before 1999) [0]C45	226	35	p<0.01	158	315
MN PROSTATE [0]C61, [9]185	202	305	p<0.01	180	226
MN MALE GENITAL ORGANS [0]C60-C63, [9]185-187	201	311	p<0.01	179	225
FALLS, BUILDING OR STRUCTURE [0]W13, [9]882	193	5		63	451
MN ESOPHAGUS [0]C15, [9]150	190	154	p<0.01	161	222
MOTOR VEHICLE NONTRAFFIC [0]V020, V030, V040, V090, V120-V122, V130-V132, V140-V142, V190-V192, V200-V202, V210-V212, V220-V222, V230-V232, V240-V242, V250-V252, V260-V262, V270-V272, V280-V282, V290-V293, V300-V303, V310-V313, V320-V323, V330-V333, V340-V343, V350-V353, V360-V363, V370-V373, V380-V383, V390-V393, V400-V403, V410-V413, V420-V423, V430-V433, V440-V443, V450-V453, V460-V463, V470-V473, V480-V483, V490-V493, V500-V503, V510-V513, V520-V523, V530-V533, V540-V542, V550-V553, V560-V563, V570-V573, V580-V583, V590-V593, V600-V603, V610-V613, V620-V623, V630-V633, V640-V643, V650-V653, V660-V663, V670-V673, V680-V683, V690-V693, V700-V703, V710-V713, V720-V723, V730-V733, V740-V743, V750-V753, V760-V763, V770-V773, V780-V783, V790-V793, V820, V835-V839, V845-V849, V855-V859, V865-V869, V880-V888, V890, [9]820-825		<5			
DROWNING [0]W65-W74, [9]910	188	23	p<0.01	119	282
ACCIDENTAL DROWNING AND SUBMERSION [0]W65-W74, [9]910	188	23	p<0.01	119	282
MN PENIS AND OTHER MALE GENITAL ORGANS [0]C60, C63, [9]187		<5			
MN TESTIS [0]C62, [9]186		<5			
ALL OTHER DISEASE OF BLOOD FORMING ORGANS [0]D467-D469, D70-D75, D77, D892, I88, R72, [9]288-289	178	61	p<0.01	136	229
MALIGNANT MELANOMA OF SKIN [0]C43, [9]172	171	85	p<0.01	137	212
ASBESTOSIS [0]J61, [9]501	171	5		55	399
ACCIDENT CAUSED BY FIREARM MISSILE [0]W32-W34, [9]922		<5			
INTENTIONAL SELF HARM [0]X60-X84, Y870, [9]950-959	169	306	p<0.01	150	189
MN PHARYNX [0]C09-C14, [9]146-149	165	36	p<0.01	116	229
FIRE IN BUILDING [0]X00, X02, [9]890-891, 8930-8931, 895-896	165	16		94	268
ACCIDENTS CAUSED BY STORMS, FLOODS, AND EARTH ERUPTIONS [0]X34-X38, [9]908-909		<5			
MN LARYNX [0]C32, [9]161	157	34	p<0.05	109	219
LYMPHATIC LEUKEMIA [0]C91, [9]204	155	50	p<0.01	115	204

**Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
ACCIDENTAL MECHANICAL SUFFOCATION [0]W75-W77, W81-W84, [9]913	155	5		50	363
MN THYROID GLAND AND OTHER ENDOCRINE GLANDS [0]C73, [9]193	154	14		84	258
NEUROTIC AND PERSONALITY DISORDERS [0]F40-F48, F60-F69, [9]300-301, 306, 308-309		<5			
MN BRAIN [0]C71, [9]191	153	116	p<0.01	126	183
MN BRAIN AND NERVOUS SYSTEM [0]C47, C70-C72, [9]191-192	153	119	p<0.01	127	183
MENTAL DISORDERS RELATED TO ALCOHOL ABUSE [0]F10, [9]291, 303, 3050	153	51	p<0.01	114	201
ALCOHOLISM [0]F10, G312, [9]291, 303, 3050	152	52	p<0.01	114	200
MOTOR VEHICLE TRAFFIC-OTHER AND UNSPECIFIED PERSON [0]V124-V129, V134-V139, V144-V149, V194-V196, V209, V229, V239, V249, V259, V269, V279, V289, V296, V299, V307-V309, V317-V319, V327-V329, V337-V339, V347-V349, V357-V359, V367-V369, V377-V379, V387-V389, V396, V399, V407-V409, V417-V419, V427-V429, V437-V439, V447-V449, V457-V459, V467-V469, V477-V479, V487-V489, V496, V499, V507, V517, V527-V529, V537-V539, V547-V549, V567-V569, V577-V579, V587-V589, V596, V599, V607, V617-V619, V627-V629, V637-V639, V647-V649, V657-V659, V667-V669, V677-V679, V687-V689, V696, V699, V707-V709, V717-V719, V727-V729, V737-V739, V747-V749, V757, V767-V769, V777-V779, V787-V789, V796-V798, V821, V829, V832-V833, V842-V843, V852, V862-V863, V870-V873, V892, [9]8104-8106, 8108-8109, 8114-8116, 8118-8119, 8124-8126, 8128-8129, 8134-8136, 8138-8139, 8144-8146, 8148-8149, 8154-8156, 8158-8159, 8164-8166, 8168-8169, 8174-8176, 8178-8179, 8184-8186, 8188-8189, 8194-8196, 8198-8199	152	22		95	230
MOTOR VEHICLE TRAFFIC-DRIVER [0]V204, V214, V224, V234, V244, V254, V264, V274, V284, V294, V305, V315, V325, V335, V345, V355, V365, V375, V385, V394, V405, V415, V425, V435, V445, V455, V465, V475, V485, V494, V505, V525, V535, V545, V565, V575, V585, V594, V605, V615, V625, V635, V645, V655, V665, V675, V685, V694, V705, V715, V725, V735, V745, V755, V765, V775, V785, V794, V830, V840, V850, V860, [9]8100, 8102, 8110, 8112, 8120, 8122, 8130, 8132, 8140, 8142, 8150, 8152, 8160, 8162, 8170, 8172, 8180, 8182, 8190, 8192	151	74	p<0.01	119	190
MN NASAL CAVITIES, MIDDLE EAR AND ACCESSORY SINUSES [0]C30-C31, [9]160		<5			
MN EYE [0]C69, [9]190		<5			
OTHER MALIGNANT NEOPLASM OF SKIN [0]C44, C460, C469, [9]173	146	22		92	221
BLADDER CANCER (includes in situ) [0]C67, [9]188, 2337, 2367, 2394	146	115	p<0.01	120	175
MN BLADDER [0]C67, [9]188	146	115	p<0.01	120	175
BRAIN AND NERVOUS SYSTEM, ALL NEOPLASMS EXCEPT SECONDARY [0]C70-C72, D33, D42-D43, [9]191-192, 225, 2375-2379, 2396-2397	146	133	p<0.01	122	173
CHRONIC MYELOID LEUKEMIA [0]C921, [9]2051	141	8		61	278
MN BONE AND ARTICULAR CARTILAGE [0]C40-C41, [9]170	138	8		60	272
MN URINARY ORGANS [0]C64-C68, [9]188, 1893-1899	137	217	p<0.01	119	156
ACCIDENTS CAUSED BY SUBMERSION, SUFFOCATION AND FOREIGN BODIES [0]W44, W65-W77, W80-W84, [9]910-915	137	41		98	185
NON-HODGKIN'S LYMPHOMAS [0]C463, C82-C85, C880, C883, C914, C96, [9]200, 202, 2733	136	162	p<0.01	116	159
LEUKEMIA AND ALEUKEMIA [0]C910-C913, C915-C919, C92-C95, [9]204-208	136	161	p<0.01	116	159
TRANSPORT FATALITIES [0]V00-V99, Y85, [9]800-848, 9290-9291	135	237	p<0.01	119	154
ACUTE LIVER FAILURE [0]K72, [9]570	133	29		89	191
INDUSTRIAL FATALITIES [0]V83, W20-W49, W85-W94, X13, X14, X16-X19, X50, X52, [9]846, 916-921, 923-927	133	19		80	207
ACUTE MYELOID LEUKEMIA [0]C920, [9]2050	132	62	p<0.05	101	169
CARDIOMYOPATHY [0]I42, I528, [9]425	130	159	p<0.01	110	151
CARDIOMEGALY [0]I42, [9]528, 4293	130	159	p<0.01	110	151

**Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
FALLS INTO HOLE, ONE LEVEL TO ANOTHER OR TO SAME LEVEL [0]W00-W09, W14-W18, [9]883-886	128	61		98	164
MN STOMACH [0]C16, [9]151	127	77	p<0.05	100	159
COLLISION WITH OBJECTS [0]W20-W23, [9]916-918	127	6		47	276
MN LYMPHATIC AND HEMATOPOIETIC TISSUE [0]C81, C463, C82-C85, C880, C883, C914, C96, C887, C889, C90, C910-C913, C915-C919, C92-C95, [9]200-208, 2733	126	387	p<0.01	114	139
ANTERIOR HORN CELL DISEASE INC MOTOR NEURONE DISEASE (AMLS) [0]G12, [9]335	125	49		93	165
ACCIDENTAL FALLS [0]W00-W19, [9]880-888	125	136	p<0.05	105	148
BRONCHIECTASIS [0]J47, [9]494	124	6		46	271
INFECTION OF THE KIDNEY [0]N10-N12, N136, N151-N159, [9]590		<5			
DISEASES OF BLOOD AND BLOOD-FORMING ORGANS [0]D510, D460-D464, D50, D511-D519, D52-D64, D65-D69, D70-D75, D77, D467-D469, D892, I88, R72, [9]281, 2810-2819, 282-289	122	86		97	150
MENTAL DISORDERS RELATED TO SUBSTANCE ABUSE [0]F10-F19, [9]291-292, 303-305	121	56		92	157
SENILITY, WITHOUT PSYCHOSIS [0]R54, [9]797	121	19		73	189
MN KIDNEY [0]C64-C66, [9]1890-1892	120	93		97	147
EXTERNAL CAUSES OF INJURY AND POISONING (E-CODES) [0]V01-Y98, [9]800-999	120	969	p<0.01	113	128
DISEASES OF ESOPHAGUS [0]K20-K23, [9]530	117	10		56	215
MN OF OTHER AND UNSPECIFIED SITES [0]C69-C80, [9]190-199	116	330	p<0.01	104	129
EXPLOSION, PRESSURE VESSEL [0]W35-W40, [9]921, 923		<5			
FIRE, OTHER AND UNSPECIFIED [0]X01, X03-X09, [9]892, 8932-8939, 894, 897-899, 9294		<5			
HODGKIN'S DISEASE [0]C81, [9]201	114	7		46	235
MN LIP, ORAL CAVITY AND PHARYNX [0]C00-C14, C462, [9]140-149	113	51		84	148
PARKINSON'S DISEASE (GROUPED) [0]G20-G22, [9]332	113	132		95	135
PARKINSON'S DISEASE [0]G20-G22, [9]332	113	132		95	135
MOTOR VEHICLE TRAFFIC-PEDESTRIAN [0]V021, V031, V041, V092, [9]8107, 8117, 8127, 8137, 8147, 8157, 8167, 8177, 8187, 8197	113	20		69	175
MN DIGESTIVE ORGANS AND PERITONEUM [0]C15-C26, C48, [9]150-159	112	879	p<0.01	105	120
MN RESPIRATORY SYSTEM [0]C30-C39, [9]160-165	112	1090	p<0.01	106	118
MN TRACHEA, BRONCHUS AND LUNG [0]C33-C34, [9]162	111	1048	p<0.01	105	117
UNSPECIFIED FALLS [0]W19, [9]887-888, 9293	111	51		83	146
PSYCHOTIC DISORDERS [0]F20-F39, [9]290-299	110	6		40	239
ISCHEMIC HEART DISEASE [0]I20-I22, I24-I25, I513, I516, [9]410-414, 4292	110	2126	p<0.01	106	115
MN PERITONEUM AND PLEURA [0]C384, C48, [9]158, 163	109	6		40	237
NEOPLASMS OF UNSPECIFIED NATURE OF EYE, BRAIN, AND NERVOUS SYSTEM [0]D42-D43, Q850, [9]2375-2379, 2396-2397	109	15		61	179
Other Benign & Unspecified Nature Neoplasms [0]D00-D30, D34-D41, D44-D45, D47-D48, [9]210-223, 226-236, 2370-2374, 238, 2390-2395, 2398-2399, 2731	109	28		72	157
MALIGNANT NEOPLASMS (MN) [0]C00-C97, [9]140-208	108	3493	p<0.01	105	111
NON-A, NON-B VIRAL HEPATITIS [0]B17-B19, [9]0704-0706, 0709	107	33		74	150
MN PANCREAS [0]C25, [9]157	107	218		93	122

**Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
DISEASES OF PANCREAS [0]K85-K86, [9]577	107	21		66	164
ACUTE MYOCARDIAL INFARCTION (AMI) [0]I21, [9]410	106	712		98	114
OTHER RESPIRATORY DISEASE [0]J30-J33, J341-J348, J35-J39, J69-J96, J98-J99, R091, [9]470-478, 494-495, 510-519	106	255		94	120
OTHER INJURY UNDETERMINED INTENT [0]Y10-Y34, Y872, [9]980-989	106	23		67	159
SARCOIDOSIS [0]D86, [9]135	105	5		34	246
MN COLON [0]C18, [9]153	105	252		92	119
HYPERPLASIA OF PROSTATE [0]N40, [9]600		<5			
CONGENITAL ANOMALIES [0]Q00-Q99, [9]740-759	105	14		58	177
MN SECONDARY, ILL-DEFINED AND UNSPECIFIED SITES [0]C74-C80, C467-C468, C60, C64, C97, [9]187, 194-199	104	311		93	117
DISEASES OF LIVER [0]K70-K77, [9]570-573	104	235		91	118
DISEASES OF THE HEART [0]I00-I52, I970-I971, I978-I979, [9]390-398, 401-405, 410-414, 420-429	103	3099		100	106
SUFFOCATION [0]W75-W84, [9]911-913	103	24		66	154
CIRRHOSIS & OTHER CHRONIC LIVER DISEASE [0]K70, K73-K74, K760, [9]571	102	175		87	118
OSTEOMYELITIS & PERIOTITIS [0]M462, M490, M493, M86, M871, M873, M896, [9]730	102	8		44	200
INJURY OF UNDETERMINED INTENT [0]Y10-Y34, Y872-Y899, [9]980-989	102	23		65	153
BACTERIAL DISEASES [0]A20-A49, [9]020-041	100	196		86	115
SEPTICAEMIA [0]A40-A41, [9]038	100	187		86	115
PNEUMOCONIOSES (OCCUPATIONAL LUNG DISEASES) (COAL, ASBESTOS, SILICA, DUST, COTTON, OTHER) [0]J60-J66, J68-J70, [9]500-508	100	82		80	124
MN CONNECTIVE AND OTHER SOFT TISSUE [0]C49, C461, [9]171	99	21		61	151
DISEASES OF THE RESPIRATORY SYSTEM [0]J00-J99, [9]460-520	99	1234		94	104
CHRONIC OBSTRUCTIVE PULMONARY DISEASE [0]J40-J44, [9]490-492, 496	99	753		92	106
DISORDERS OF THE PERIPHERAL NERVOUS SYSTEM [0]G50-G73, [9]350-359	98	13		52	167
DISEASES OF ARTERIES, ARTERIOLES, AND CAPILLARIES [0]I70-I79, [9]440-448	98	145		82	115
MEDICAL COMPLICATIONS & MISADVENTURE [0]Y40-Y84, Y88, [9]870-879, 930-949	98	15		55	162
OTHER INJURIES [0]W25-W29, W32-W34, W41-W64, W88-W99, X10-X29, X50-X59, Y36, Y86, Y89, [9]914-915, 920, 922, 924, 926-928, 9298-9299, 990-996, 9970-9973, 9975-9979, 998-999	97	36		68	134
MN BILIARY PASSAGES, LIVER, AND GALL BLADDER [0]C22-C24, [9]155-156	96	118		79	115
OTHER DISEASES OF MALE GENITAL ORGANS [0]N41-N50, [9]601-608		<5			
PNEUMONIA [0]A481, J12-J18, [9]480-486	95	204		83	109
STRIKING AGAINST OR STRUCK BY OBJECTS OR PERSONS [0]W20-W22, W51, [9]917		<5			
OTHER FORMS OF HEART DISEASE [0]I30-I52, [9]411-414	94	718		87	101

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DILATED CARDIOMYOPATHY [0]J420, [9]4254-4259	94	22		59	142
DISEASES OF THE DIGESTIVE SYSTEM [0]K00-K93, R682, [9]520-579	93	433		85	102
EXCESSIVE COLD [0]W93, X31, [9]901		<5			
DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS [0]G00-G99, H00-H95, [9]320-389	92	561	p<0.05	84	100
OTHER HEART DISEASE (PERICARDITIS, ENDOCARDITIS, MYOCARDITIS, ETC.) [0]I30-I33, I40, I50, I510-I512, I514-I515, I517-I521, I970-I971, I978-I979, [9]420-423, 428, 4290-4291, 4293-4299	91	281		81	103
CHRONIC & UNSPECIFIED NEPHRITIS & RENAL FAILURE & OTHER RENAL SCLEROSIS [0]N019, N03, N05, N07, N140-N143, N150, N18-N19, N26, [9]582-583, 585-587	90	176		77	104
EXPOSURE TO FORCES OF NATURE [0]X30-X39, [9]900-909, 9295	90	5		29	209
INHALATION AND INGESTION OF NON-FOOD OBJECT CAUSING SUFFOCATION [0]W80, [9]912	90	13		48	154
NON-PSYCHOTIC DISORDERS [0]F40-F69, F80-F99, [9]300-302, 304, 3051-3059, 306-319, 7836, 7846		<5			
HERNIA OF ABDOMINAL CAVITY AND INTESTINAL OBSTRUCTION [0]K40-K46, K56, [9]550-553, 560	89	31		61	127
OTHER DISEASES OF DIGESTIVE SYSTEM [0]K00-K22, K35-K38, K50-K55, K57-K58, K590-K598, K60-K66, K71-K72, K75, K761-K769, K78-K92, R682, [9]402, 520-530, 540-543, 555-556, 562-570, 572-579, 9974	89	212		77	102
INFECTIONS OF THE SKIN & SUBCUTANEOUS TISSUE [0]J340, L00-L08, L303, L88, [9]680-685, 6860, 6868, 6869	89	9		41	170
DISEASES OF URINARY SYSTEM [0]N00-N28, [9]580-599	89	224		77	101
DISEASES OF KIDNEY [0]N00-N28, [9]580-593	89	224		77	101
FALLS, STAIRS OR STEPS [0]W10, [9]880	89	9		40	168
INFECTIOUS AND PARASITIC DISEASES [0]A00-B99, [9]001-139	88	288	p<0.05	78	98
MULTIPLE MYELOMA [0]C887, C889, C90, [9]203	88	57		67	114
MENTAL DISORDERS [0]F00-F99, [9]290-319	88	373	p<0.01	79	97
MENTAL DISORDERS, EXCLUDING SCHIZOPHRENIA AND RETARDATION [0]F00-F19, F30-F69, F80-F99, [9]290-294, 296	88	371	p<0.05	79	97
MN PERITONEUM & OTHER DIGESTIVE ORGANS [0]C26, C48, [9]158-159	87	11		43	155
ACUTE, CHRONIC, OR UNSPECIFIED RENAL FAILURE [0]N17-N19, [9]584-586	87	198	p<0.05	75	100
ALZHEIMER'S AND OTHER DEGENERATIVE DISEASE [0]G30-G32, [9]290, 3310, 3311	86	289	p<0.01	77	97
INFLUENZA [0]J10-J11, [9]487	86	5		28	202
MYONEURAL DISORDERS [0]G70-G73, [9]358	85	8		37	167
DISEASES OF THE GENITOURINARY SYSTEM [0]N00-N99, R31, [9]580-629	85	264	p<0.01	75	96
STRUCK BY FALLING OBJECT [0]W20, [9]916		<5			
CONDUCTIVE DISORDERS, DYSRHYTHMIAS [0]I44-I49, R001, R008, [9]426, 427	84	182	p<0.05	72	97
CHRONIC DISEASE OF ENDOCARDIUM [0]I34-I38, [9]424	83	81		66	103
SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS, NEC [0]R00-R99, [9]780-799	83	117	p<0.05	69	99

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MN RECTUM, RECTOSIGMOID JUNCTION AND ANUS [0]C19-C21, [9]154	82	46		60	109
ANEMIAS OF OTHER & UNSPECIFIED TYPE [0]D460-D464, D50, D511-D519, D52-D64, [9]280, 2811-2819, 282-285	82	18		49	130
HYPERTENSION WITHOUT HEART DISEASE [0]I10, I12, [9]401, 403, 405	81	88	p<0.05	65	100
DIABETES MELLITUS [0]E10-E14, [9]250	80	331	p<0.01	72	89
CEREBROVASCULAR DISEASE (STROKE) [0]G450-G452, G454-G459, I60-I69, [9]430-438	80	514	p<0.01	73	87
MN TONGUE [0]C01-C02, [9]141	79	9		36	149
RHEUMATIC HEART DISEASE & FEVER [0]I00-I09, [9]390-398	78	13		41	133
MOTOR VEHICLE TRAFFIC-PASSENGER [0]V205, V215, V225, V235, V245, V255, V265, V275, V285, V295, V306, V316, V326, V336, V346, V356, V366, V376, V386, V395, V406, V416, V426, V436, V446, V456, V466, V476, V486, V495, V506, V516, V526, V536, V546, V566, V576, V586, V595, V606, V616, V626, V636, V646, V666, V676, V686, V695, V706, V716, V726, V736, V746, V756, V766, V776, V786, V795, V831, V841, V851, V861, [9]8101, 8103, 8111, 8113, 8121, 8123, 8131, 8133, 8141, 8143, 8151, 8153, 8161, 8163, 8171, 8173, 8181, 8183, 8191, 8193	78	9		36	149
HYPERTENSION WITH HEART DISEASE [0]I11, I13, [9]402, 404	77	120	p<0.01	64	92
DISEASES OF VEINS AND LYMPHATICS [0]I80-I89, [9]451-457	76	14		41	127
DISEASES OF STOMACH AND DUODENUM [0]K25-K31, K599, [9]531-537	75	15		42	124
OTHER GENITO-UNINARY SYSTEM DISEASES [0]N02, N06, N130-N135, N137-N139, N25, N27-N28, N30-N32, N340, N342-N349, N35-N36, N390, N392, N398-N399, R31, [9]588-589, 591, 593, 595-599	75	46	p<0.05	55	100
POLYCYTHEMIA VERA [0]D45, [9]2384		<5			
OTHER ILL-DEFINED AND UNKNOWN CAUSES OF MORTALITY [0]R090, R092, R450, R53, R564, R69, R99, [9]799	73	55	p<0.05	55	95
ACUTE GLOMERULONEPHRITIS NEPHROTIC SYNDROME & ACUTE RENAL FAILURE [0]N00, N010-N018, N04, N144, N17, [9]580-581, 584	71	30		48	101
MN SALIVARY GLANDS [0]C07-C08, [9]142		<5			
SUDDEN DEATH, CAUSE UNKNOWN [0]R95, R96, R98, [9]798		<5			
DISEASES OF THE PULMONARY CIRCULATION [0]I26-I28, [9]415-417	69	50	p<0.01	51	91
RHEUMATOID ARTHRITIS [0]M05-M06, [9]714	68	10		32	125
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE [0]L00-L99, [9]680-709	67	14		37	113
EXCESSIVE HEAT [0]W92, X30, [9]900		<5			
PEPTIC ULCER [0]K27, [9]531-534		<5			
ARTHRITIS & SPONDYLITIS [0]M00-M11, M120-M121, M125-M128, M13-M19, M45, M460-M461, M465-M469, M47, M481-M484, M488, [9]274, 711-716, 720-721	65	14		35	108
ACCIDENTAL POISONING [0]X40-X49, [9]960-989, 9292	65	92	p<0.01	52	80
DISEASES OF MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE [0]M00-M99, G718, R262, [9]710-739	64	45	p<0.01	47	86
ASSAULT AND HOMICIDE [0]X85-X99, Y00-Y09, Y35, Y871, [9]960-978	64	40	p<0.01	46	87
OTHER AND UNSPECIFIED APLASTIC ANEMIA [0]D618, D619, [9]2848, 2849		<5			
APLASTIC ANEMIA [0]D60-D61, [9]284		<5			
MN GALLBLADDER AND EXTRAHEPATIC BILE DUCTS [0]C23-C24, [9]156	61	12		32	107

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Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
OTHER DISEASES OF THE NERVOUS SYSTEM & SENSE ORGANS [0]G08, G10-G11, G13-G19, G23-G29, G38-G39, G42-G47, G453, G473, G478, G74, H00-H01, H020-H025, H027-H029, H04-H95, R441, [9]325, 330-337, 341-344, 346-357, 360-389	61	9		28	116
OTHER DISEASES OF THE MUSCULOSKELETAL SYSTEM [0]G718, M122-M124, M20-M25, M32-M35, M40-M43, M463-M464, M480, M485, M489, M50-M81, M84-M85, M870, M872, M878-M879, M88, M890-M895, M898-M899, M91-M99, R262	58	21	p<0.01	36	89
MULTIPLE SCLEROSIS AND OTHER DEMYELINATING DISEASE [0]G35-G37, [9]340-341	57	13	p<0.05	31	98
AGRANULOCYTOSIS [0]D70, [9]2880		<5			
COALWORKERS' PNEUMOCONIOSIS [0]J60, [9]500		<5			
MACHINERY [0]W24, W30-W31, [9]919		<5			
MN OTHER PARTS BUCCAL CAVITY [0]C03-C08, C462, [9]142-145	52	6		19	113
MN BONE, CONNECTIVE TISSUE, SKIN, AND BREAST [0]C40-C44, C49-C50, [9]170-175	50	160	p<0.01	43	59
COAGULATION DEFECTS, PURPURA & OTHER HEMORRHAGIC CONDITIONS [0]D65-D69, [9]286-287	49	7		20	101
CHRONIC PULMONARY HEART DISEASE [0]I279, [9]416		<5			
DISORDERS OF GALLBLADDER AND BILIARY TRACT [0]K80-K83, [9]574-576	48	10	p<0.05	23	88
OTHER DISEASES OF THE SKIN & SUBCUTANEOUS TISSUES [0]L10-L29, L300-L302, L304-L309, L40-L45, L50-L87, L89-L98, R234-R238, [9]6861, 690-709	47	5		15	109
MN SMALL INTESTINE, INCLUDING DUODENUM [0]C17, [9]152		<5			
OTHER TRANSPORTATION INJURIES [0]V01, V029, V039, V049, V06, V091, V093-V099, V10-V11, V123, V133, V143, V16-V18, V193, V198-V199, V203, V213, V219, V223, V233, V243, V253, V263, V273, V283, V298, V304, V314, V324, V334, V344, V354, V364, V374, V384, V398, V404, V414, V424, V434, V444, V454, V464, V474, V484, V498, V504, V509, V514-V515, V519, V524, V534, V543-V544, V554-V559, V564, V574, V584, V598, V604, V609, V614, V624, V634, V644, V654, V656, V664, V674, V684, V698, V704, V714, V724, V734, V744, V754, V759, V764, V774, V784, V799, V80, V822-V828, V834, V844, V853-V854, V864, V879, V889, V891, V893-V899, V98-V99, Y85, [9]826-829, 846-849, 9290-9291		<5			
MENTAL DISORDERS RELATED TO DRUG ABUSE [0]F11-F19, [9]292, 304	39	5	p<0.05	13	91
DRUG-RELATED DEATHS [0]F11-F19, [9]292, 304, 3052-3059, 850-858, 9500-9505, 9620, 9800-9805	39	5	p<0.05	13	91
ASTHMA [0]J45-J46, [9]493	38	6	p<0.01	14	83
DIFFUSE DISEASES OF CONNECTIVE TISSUE [0]M30-M36, [9]710	36	8	p<0.01	16	71
HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION (AIDS) [0]B20-B24, [9]042-044	35	13	p<0.01	19	60
EPILEPSY [0]G40-G41, [9]345		<5			
SYSTEMIC SCLEROSIS/SCLERODERMA [0]M34, [9]7101		<5			
BENIGN NEOPLASMS OF EYE, BRAIN AND CNS [0]D31-D33, [9]224-225		<5			
MN CERVIX UTERI [0]C53, [9]180		<5			
MN BREAST [0]C50, [9]174, 175	11	24	p<0.01	7	16
MN OTHER PARTS OF UTERUS [0]C54-C55, C58, [9]179, 181-182	11	5	p<0.01	4	26
MN FEMALE GENITAL ORGANS [0]C51-C58, [9]179-184	8	13	p<0.01	4	14
MN OVARY AND OTHER UTERINE ADNEXA [0]C56, C570-C574, C578, [9]183	6	5	p<0.01	2	14
TUBERCULOSIS [0]A15-A19, [9]010-018, 137		<5			

Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers 1999, 2003-2004, 2007-2013					
Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
PULMONARY TUBERCULOSIS [0]A16, B909, J65, O980, [9]010-012		<5			
TUBERCULOUS FIBROSIS OF LUNG (SILICOTUBERCULOSIS) [0]A15-A16, [9]0114		<5			
VIRAL HEPATITIS A [0]B15, [9]0700, 0701		<5			
VIRAL HEPATITIS B [0]B16, [9]0702, 0703		<5			
MN LIP [0]C00, [9]140		<5			
MN KAPOSII SARCOMA (no codes before 1999) [0]C46		<5			
MN OTHER AND UNSPECIFIED FEMALE GENITAL ORGANS [0]C51-C52, C577, C579, [9]184		<5			
MN SCROTUM [0]C632, C639, [9]1877, 1879		<5			
PERNICIOUS ANEMIAS [0]D510, [9]2810		<5			
METHEMOGLOBINEMIA [0]D74, [9]2897		<5			
MENTAL DISORDERS ASSOCIATED WITH SOLVENT EXPOSURE [0]F18, [9]292, 3059, 3046, 2940		<5			
TOXIC ENCEPHALOPATHY [0]G92, [9]3483		<5			
RAYNAUD'S SYNDROME [0]I730, [9]4430		<5			
ACUTE RESPIRATORY INFECTIONS EXCEPT INFLUENZA & PNEUMONIA [0]J00-J01, J028-J029, J038-J039, J04-J06, J20-J22, [9]460-466		<5			
HYPERSENSITIVITY PNEUMONITIS (FARMERS LUNG, BAGASSOSIS, BIRD LUNG, SUBEROSIS, MALTWORKERS, MUSHROOM, MAPLEBARK, VENTILATORY FUNGI, OTHER) [0]J67, [9]495		<5			
SILICOSIS [0]J62, [9]502		<5			
OTHER AND UNSPECIFIED PNEUMOCONIOSES (ALUMINIUM, BERYLLIUM, BYSSINOSIS, ETC.) [0]J63-J64, [9]503-505		<5			
PNEUMOCONIOSIS DUE TO OTHER INORGANIC DUST (ALUMINUM, BERYLLIUM, BAUXITE, ETC.) [0]J63, [9]503		<5			
PNEUMOPATHY DUE TO INHALATION OF SPECIFIC ORGANIC DUST (BYSSINOSIS, CANNABINOSIS, FLAX) [0]J66, [9]504		<5			
LUNG CONDITIONS DUE TO SOLIDS, FUMES, VAPORS, RADIATION- □ EXCLUDE FOOD INHALATION [0]J68, J691, J698, J70, [9]506, 5071, 5078, 508		<5			
RESPIRATORY CONDITIONS DUE TO CHEMICAL FUMES, VAPORS, OILS, ESSENCES & SOLIDS [0]J68, J691, [9]506, 5071		<5			
RESPIRATORY CONDITIONS DUE TO CHEMICAL FUMES AND VAPORS [0]J68, [9]506		<5			
TOXIC HEPATITIS [0]K71, [9]5733		<5			
SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) [0]M32, [9]7100		<5			
DISEASES OF THE BREAST [0]N60-N64, [9]610-611		<5			
DISEASES OF THE FEMALE GENITAL ORGANS [0]N70-N99, [9]614-629		<5			

**Table B-1. Proportionate Mortality Ratio for Firefighters & Fire Prevention Workers
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD [0]P00-P96, [9]760-779		<5			
ACCIDENTS CAUSED BY LIGHTENING [0]X33, [9]907		<5			
FOREIGN BODY ACCIDENTALLY ENTERING EYE OR OTHER ORIFICE [0]W44, [9]914-915		<5			
ACCIDENT CAUSED BY HOT, CAUSTIC, OR CORROSIVE MATERIAL [0]X10-X19, [9]924		<5			
ACCIDENT CAUSED BY ELECTRIC CURRENT [0]X10-X19, [9]925		<5			
ACCIDENT CAUSED BY OVEREXERTION AND STRENUOUS MOVEMENT [0]X50, [9]927		<5			
MONONEURITIS OF UPPER LIMB AND MONONEURITIS MULTIPLEX [0]G560, G562, G563, [9]3540, 3542, 3543		<5			
EXPOSURE TO RADIATION [0]W88-W91, [9]926		<5			
TERRORISM (CODED 2001 ON) [0]U01-U03		<5			
[0] in Industry or Occupation column indicates the corresponding 2000 Census Code; [0] in Cause of Death (ICD) column indicates corresponding ICD-10 Disease Classification System codes.					
[9] in Industry or Occupation column indicates the corresponding 1990 Census Code; [9] in Cause of Death (ICD) column indicates corresponding ICD-9 Disease Classification System codes.					
For the PMR queries, death certificate data for decedents that died in one of the 24 U.S. states between 1999, 2003- 2004, 2007-2013 were the source of age (ages 18-90), race (black, white), sex, usual occupation and industry and underlying cause-of-death. PMRs were calculated for White and Black males and females, and all races and sexes combined to evaluate the mortality patterns for 250 cancer and acute and chronic disease categories for 350 industrial and 550 occupational categories. If a PMR is greater than 100, it is elevated; if less, it is said to be decreased. User may consult NIOSH crosswalks for ICD Revisions 8, 9, 10 and 1990-2000 Census industry and occupation category codes (1990-2000 Census industry and occupation category codes). If the number of observed deaths was less than 5, it was suppressed and is shown as <5.					

Source: CDC, 2018a

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
EXPLOSION, PRESSURE VESSEL [0]W35-W40, [9]921, 923		<5			
FIRE, OTHER AND UNSPECIFIED [0]X01, X03-X09, [9]892, 8932-8939, 894, 897-899, 9294		<5			
CAUGHT ACCIDENTALLY IN OR BETWEEN OBJECTS [0]W23, [9]918		<5			
MN OTHER AND UNSPECIFIED URINARY ORGANS [0]C68, [9]1893-1899		<5			
SENILITY, WITHOUT PSYCHOSIS [0]R54, [9]797		<5			
WATER, AIR AND SPACE TRANSPORT [0]V90-V97, [9]830-845	390	6	p<0.01	143	848
TUBERCULOUS FIBROSIS OF LUNG (SILICOTUBERCULOSIS) [0]A15-A16, [9]0114		<5			
SUDDEN DEATH, CAUSE UNKNOWN [0]R95, R96, R98, [9]798		<5			

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
BRONCHIECTASIS [0]J47, [9]494		<5			
MOTOR VEHICLE NONTRAFFIC [0]V020, V030, V040, V090, V120-V122, V130-V132, V140-V142, V190-V192, V200-V202, V210-V212, V220-V222, V230-V232, V240-V242, V250-V252, V260-V262, V270-V272, V280-V282, V290-V293, V300-V303, V310-V313, V320-V323, V330-V333, V340-V343, V350-V353, V360-V363, V370-V373, V380-V383, V390-V393, V400-V403, V410-V413, V420-V423, V430-V433, V440-V443, V450-V453, V460-V463, V470-V473, V480-V483, V490-V493, V500-V503, V510-V513, V520-V523, V530-V533, V540-V542, V550-V553, V560-V563, V570-V573, V580-V583, V590-V593, V600-V603, V610-V613, V620-V623, V630-V633, V640-V643, V650-V653, V660-V663, V670-V673, V680-V683, V690-V693, V700-V703, V710-V713, V720-V723, V730-V733, V740-V743, V750-V753, V760-V763, V770-V773, V780-V783, V790-V793, V820, V835-V839, V845-V849, V855-V859, V865-V869, V880-V888, V890, [9]820-825		<5			
PULMONARY TUBERCULOSIS [0]A16, B909, J65, O980, [9]010-012		<5			
INHALATION AND INGESTION OF NON-FOOD OBJECT CAUSING SUFFOCATION [0]W80, [9]912		<5			
RHEUMATIC HEART DISEASE & FEVER [0]I00-I09, [9]390-398	315	5	p<0.05	102	736
MN MESOTHELIOMA (no codes before 1999) [0]C45		<5			
OTHER TRANSPORTATION INJURIES [0]V01, V029, V039, V049, V06, V091, V093-V099, V10-V11, V123, V133, V143, V16-V18, V193, V198-V199, V203, V213, V219, V223, V233, V243, V253, V263, V273, V283, V298, V304, V314, V324, V334, V344, V354, V364, V374, V384, V398, V404, V414, V424, V434, V444, V454, V464, V474, V484, V498, V504, V509, V514-V515, V519, V524, V534, V543-V544, V554-V559, V564, V574, V584, V598, V604, V609, V614, V624, V634, V644, V654, V656, V664, V674, V684, V698, V704, V714, V724, V734, V744, V754, V759, V764, V774, V784, V799, V80, V822-V828, V834, V844, V853-V854, V864, V879, V889, V891, V893-V899, V98-V99, Y85, [9]826-829, 846-849, 9290-9291		<5			
FALLS, BUILDING OR STRUCTURE [0]W13, [9]882		<5			
RAILWAY, WATER, AIR, AND SPACE TRANSPORT FATALITIES [0]V05, V15, V81, V90-V97, [9]800-807, 830-838, 840-845	272	6	p<0.05	100	592
TUBERCULOSIS [0]A15-A19, [9]010-018, 137		<5			
MN BONE AND ARTICULAR CARTILAGE [0]C40-C41, [9]170		<5			
DISORDERS OF GALLBLADDER AND BILIARY TRACT [0]K80-K83, [9]574-576		<5			
NEOPLASMS OF UNSPECIFIED NATURE OF EYE, BRAIN, AND NERVOUS SYSTEM [0]D42-D43, Q850, [9]2375-2379, 2396-2397		<5			
MN KIDNEY [0]C64-C66, [9]1890-1892	208	19	p<0.01	125	324
ACCIDENT CAUSED BY FIREARM MISSILE [0]W32-W34, [9]922		<5			
OTHER DISEASES OF THE SKIN & SUBCUTANEOUS TISSUES [0]L10-L29, L300-L302, L304-L309, L40-L45, L50-L87, L89-L98, R234-R238, [9]6861, 690-709		<5			
PSYCHOTIC DISORDERS [0]F20-F39, [9]290-299		<5			
OTHER INJURY UNDETERMINED INTENT [0]Y10-Y34, Y872, [9]980-989	194	18	p<0.05	115	306
MALIGNANT MELANOMA OF SKIN [0]C43, [9]172	193	15	p<0.05	108	318
OTHER MALIGNANT NEOPLASM OF SKIN [0]C44, C460, C469, [9]173		<5			
INJURY OF UNDETERMINED INTENT [0]Y10-Y34, Y872-Y899, [9]980-989	191	18	p<0.05	113	302
DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE [0]L00-L99, [9]680-709		<5			
ACUTE GLOMERULONEPHRITIS NEPHROTIC SYNDROME & ACUTE RENAL FAILURE [0]N00, N010-N018, N04, N144, N17, [9]580-581, 584	184	6		68	401
DISEASES OF PANCREAS [0]K85-K86, [9]577	180	6		66	392

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
INFECTIONS OF THE SKIN & SUBCUTANEOUS TISSUE [0]J340, L00-L08, L303, L88, [9]680-685, 6860, 6868, 6869		<5			
MN URINARY ORGANS [0]C64-C68, [9]188, 1893-1899	176	27	p<0.01	116	255
CHRONIC PULMONARY HEART DISEASE [0]I279, [9]416		<5			
ACCIDENTS CAUSED BY SUBMERSION, SUFFOCATION AND FOREIGN BODIES [0]W44, W65-W77, W80-W84, [9]910-915	162	11		81	290
DROWNING [0]W65-W74, [9]910	160	7		64	329
ACCIDENTAL DROWNING AND SUBMERSION [0]W65-W74, [9]910	160	7		64	329
NON-A, NON-B VIRAL HEPATITIS [0]B17-B19, [9]0704-0706, 0709	159	12		82	278
OTHER DISEASES OF THE MUSCULOSKELETAL SYSTEM [0]G718, M122-M124, M20-M25, M32-M35, M40-M43, M463-M464, M480, M485, M489, M50-M81, M84-M85, M870, M872, M878-M879, M88, M890-M895, M898-M899, M91-M99, R262	158	8		68	312
HODGKIN'S DISEASE [0]C81, [9]201		<5			
DISEASES OF ESOPHAGUS [0]K20-K23, [9]530		<5			
MN TESTIS [0]C62, [9]186		<5			
DISEASES OF VEINS AND LYMPHATICS [0]I80-I89, [9]451-457	146	5		47	341
MULTIPLE SCLEROSIS AND OTHER DEMYELINATING DISEASE [0]G35-G37, [9]340-341	143	6		53	312
OSTEOMYELITIS & PERIOTITIS [0]M462, M490, M493, M86, M871, M873, M896, [9]730		<5			
MEDICAL COMPLICATIONS & MISADVENTURE [0]Y40-Y84, Y88, [9]870-879, 930-949		<5			
OTHER DISEASES OF DIGESTIVE SYSTEM [0]K00-K22, K35-K38, K50-K55, K57-K58, K590-K598, K60-K66, K71-K72, K75, K761-K769, K78-K92, R682, [9]402, 520-530, 540-543, 555-558, 562-570, 572-579, 9974	142	39	p<0.05	101	194
MN CERVIX UTERI [0]C53, [9]180	139	8		60	275
INFLUENZA [0]J10-J11, [9]487		<5			
OTHER INJURIES [0]W25-W29, W32-W34, W41-W64, W88-W99, X10-X29, X50-X59, Y36, Y86, Y89, [9]914-915, 920, 922, 924, 926-928, 9298-9299, 990-996, 9970-9973, 9975-9979, 998-999	136	7		55	280
ACCIDENTAL POISONING [0]X40-X49, [9]960-989, 9292	135	88	p<0.01	109	167
CHRONIC MYELOID LEUKEMIA [0]C921, [9]2051		<5			
ALL OTHER DISEASE OF BLOOD FORMING ORGANS [0]D467-D469, D70-D75, D77, D892, I88, R72, [9]288-289		<5			
OTHER RESPIRATORY DISEASE [0]J30-J33, J341-J348, J35-J39, J69-J96, J98-J99, R091, [9]470-478, 494-495, 510-519	131	24		84	195
COLLISION WITH OBJECTS [0]W20-W23, [9]916-918		<5			
DISEASES OF THE PULMONARY CIRCULATION [0]I26-I28, [9]415-417	126	12		65	219
DISEASES OF MUSCULOSKELETAL SYSTEM AND CONNECTIVE TISSUE [0]M00-M99, G718, R262, [9]710-739	124	10		60	229
INTENTIONAL SELF HARM [0]X60-X84, Y870, [9]950-959	124	84		99	153
MN PANCREAS [0]C25, [9]157	123	27		81	179
SUFFOCATION [0]W75-W84, [9]911-913		<5			
INDUSTRIAL FATALITIES [0]V83, W20-W49, W85-W94, X13, X14, X16-X19, X50, X52, [9]846, 916-921, 923-927	122	6		45	266

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
ANTERIOR HORN CELL DISEASE INC MOTOR NEURONE DISEASE (AMLS) [0]J45-J46, [9]493	121	6		44	263
ASTHMA [0]J45-J46, [9]493		<5			
ACUTE, CHRONIC, OR UNSPECIFIED RENAL FAILURE [0]N17-N19, [9]584-586	119	22		75	180
OTHER DISEASES OF THE NERVOUS SYSTEM & SENSE ORGANS [0]G08, G10-G11, G13-G19, G23-G29, G38-G39, G42-G47, G453, G473, G478, G74, H00-H01, H020-H025, H027-H029, H04-H95, R441, [9]325, 330-337, 341-344, 346-357, 360-389		<5			
EXTERNAL CAUSES OF INJURY AND POISONING (E-CODES) [0]V01-Y98, [9]800-999	117	315	p<0.01	104	130
BLADDER CANCER (includes in situ) [0]C67, [9]188, 2337, 2367, 2394	116	7		47	240
MN BLADDER [0]C67, [9]188	116	7		47	240
DISEASES OF URINARY SYSTEM [0]N00-N28, [9]580-599	116	24		74	172
DISEASES OF KIDNEY [0]N00-N28, [9]580-593	116	24		74	172
HYPERTENSION WITH HEART DISEASE [0]I11, I13, [9]402, 404	115	24		74	171
TRANSPORT FATALITIES [0]V00-V99, Y85, [9]800-848, 9290-9291	115	75		91	145
MOTOR VEHICLE TRAFFIC-DRIVER [0]V204, V214, V224, V234, V244, V254, V264, V274, V284, V294, V305, V315, V325, V335, V345, V355, V365, V375, V385, V394, V405, V415, V425, V435, V445, V455, V465, V475, V485, V494, V505, V525, V535, V545, V565, V575, V585, V594, V605, V615, V625, V635, V645, V655, V665, V675, V685, V694, V705, V715, V725, V735, V745, V755, V765, V775, V785, V794, V830, V840, V850, V860, [9]8100, 8102, 8110, 8112, 8120, 8122, 8130, 8132, 8140, 8142, 8150, 8152, 8160, 8162, 8170, 8172, 8180, 8182, 8190, 8192	114	22		71	172
MN TONGUE [0]C01-C02, [9]141		<5			
MN OTHER PARTS OF UTERUS [0]C54-C55, C58, [9]179, 181-182	112	6		41	244
DIABETES MELLITUS [0]E10-E14, [9]250	112	50		83	148
ACUTE MYOCARDIAL INFARCTION (AMI) [0]I21, [9]410	112	74		88	141
HYPERTENSION WITHOUT HEART DISEASE [0]I10, I12, [9]401, 403, 405	110	10		53	203
MN LARYNX [0]C32, [9]161		<5			
NON-HODGKIN'S LYMPHOMAS [0]C463, C82-C85, C880, C883, C914, C96, [9]200, 202, 2733	108	13		58	185
ISCHEMIC HEART DISEASE [0]I20-I22, I24-I25, I513, I516, [9]410-414, 4292	108	188		93	124
DISEASES OF THE RESPIRATORY SYSTEM [0]J00-J99, [9]460-520	106	98		86	129
CHRONIC & UNSPECIFIED NEPHRITIS & RENAL FAILURE & OTHER RENAL SCLEROSIS [0]N019, N03, N05, N07, N140-N143, N150, N18-N19, N26, [9]582-583, 585-587	106	17		62	169
COAGULATION DEFECTS, PURPURA & OTHER HEMORRHAGIC CONDITIONS [0]D65-D69, [9]286-287		<5			
DISEASES OF THE HEART [0]I00-I52, I970-I971, I978-I979, [9]390-398, 401-405, 410-414, 420-429	103	290		92	116
CEREBROVASCULAR DISEASE (STROKE) [0]G450-G452, G454-G459, I60-I69, [9]430-438	103	51		77	136
CHRONIC OBSTRUCTIVE PULMONARY DISEASE [0]J40-J44, [9]490-492, 496	103	54		77	134
MN COLON [0]C18, [9]153	102	27		67	149
DILATED CARDIOMYOPATHY [0]I420, [9]4254-4259	101	5		33	235
CONDUCTIVE DISORDERS, DYSRHYTHMIAS [0]I44-I49, R001, R008, [9]426, 427	101	19		61	157

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
MN SECONDARY, ILL-DEFINED AND UNSPECIFIED SITES [0]C74-C80, C467-C468, C60, C64, C97, [9]187, 194-199	100	34		69	139
MN BONE, CONNECTIVE TISSUE, SKIN, AND BREAST [0]C40-C44, C49-C50, [9]170-175	99	49		74	131
MN THYROID GLAND AND OTHER ENDOCRINE GLANDS [0]C73, [9]193		<5			
DISEASES OF THE GENITOURINARY SYSTEM [0]N00-N99, R31, [9]580-629	99	24		64	148
MN ESOPHAGUS [0]C15, [9]150	98	10		47	180
DIFFUSE DISEASES OF CONNECTIVE TISSUE [0]M30-M36, [9]710		<5			
DISEASES OF THE DIGESTIVE SYSTEM [0]K00-K93, R682, [9]520-579	97	68		75	123
DISEASES OF STOMACH AND DUODENUM [0]K25-K31, K599, [9]531-537		<5			
SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS, NEC [0]R00-R99, [9]780-799	91	17		53	146
MN PHARYNX [0]C09-C14, [9]146-149		<5			
MENTAL DISORDERS, EXCLUDING SCHIZOPHRENIA AND RETARDATION [0]F00-F19, F30-F69, F80-F99, [9]290-294, 296	88	24		56	131
MOTOR VEHICLE TRAFFIC-OTHER AND UNSPECIFIED PERSON [0]V124-V129, V134-V139, V144-V149, V194-V196, V209, V229, V239, V249, V259, V269, V279, V289, V296, V299, V307-V309, V317-V319, V327-V329, V337-V339, V347-V349, V357-V359, V367-V369, V377-V379, V387-V389, V396, V399, V407-V409, V417-V419, V427-V429, V437-V439, V447-V449, V457-V459, V467-V469, V477-V479, V487-V489, V496, V499, V507, V517, V527-V529, V537-V539, V547-V549, V567-V569, V577-V579, V587-V589, V596, V599, V607, V617-V619, V627-V629, V637-V639, V647-V649, V657-V659, V667-V669, V677-V679, V687-V689, V696, V699, V707-V709, V717-V719, V727-V729, V737-V739, V747-V749, V757, V767-V769, V777-V779, V787-V789, V796-V798, V821, V829, V832-V833, V842-V843, V852, V862-V863, V870-V878, V892, [9]8104-8106, 8108-8109, 8114-8116, 8118-8119, 8124-8126, 8128-8129, 8134-8136, 8138-8139, 8144-8146, 8148-8149, 8154-8156, 8158-8159, 8164-8166, 8168-8169, 8174-8176, 8178-8179, 8184-8186, 8188-8189, 8194-8196, 8198-8199	88	5		29	205
BACTERIAL DISEASES [0]A20-A49, [9]020-041	87	17		50	139
MENTAL DISORDERS [0]F00-F99, [9]290-319	87	24		55	129
INFECTIOUS AND PARASITIC DISEASES [0]A00-B99, [9]001-139	86	42		62	117
MALIGNANT NEOPLASMS (MN) [0]C00-C97, [9]140-208	86	322	p<0.01	77	96
MN DIGESTIVE ORGANS AND PERITONEUM [0]C15-C26, C48, [9]150-159	86	79		68	107
DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS [0]G00-G99, H00-H95, [9]320-389	86	36		60	119
MN RESPIRATORY SYSTEM [0]C30-C39, [9]160-165	85	88		68	105
SYSTEMIC SCLEROSIS/SCLERODERMA [0]M34, [9]7101		<5			
MN TRACHEA, BRONCHUS AND LUNG [0]C33-C34, [9]162	84	84		67	104
DISEASES OF ARTERIES, ARTERIOLES, AND CAPILLARIES [0]I70-I79, [9]440-448	84	10		41	155
HERNIA OF ABDOMINAL CAVITY AND INTESTINAL OBSTRUCTION [0]K40-K46, K56, [9]550-553, 560		<5			
FALLS, STAIRS OR STEPS [0]W10, [9]880		<5			
FIRE IN BUILDING [0]X00, X02, [9]890-891, 8930-8931, 895-896		<5			
CARDIOMYOPATHY [0]I42, I528, [9]425	83	14		46	140

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
CARDIOMEGALY [0]42, [9]528, 4293	83	14		46	140
SEPTICAEMIA [0]A40-A41, [9]038	81	15		45	134
MN FEMALE GENITAL ORGANS [0]C51-C58, [9]179-184	80	18		48	127
OTHER FORMS OF HEART DISEASE [0]I30-I52, [9]411-414	80	53		60	104
HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION (AIDS) [0]B20-B24, [9]042-044	79	12		41	138
Other Benign & Unspecified Nature Neoplasms [0]D00-D30, D34-D41, D44-D45, D47-D48, [9]210-223, 226-236, 2370-2374, 238, 2390-2395, 2398-2399, 2731		<5			
MN CONNECTIVE AND OTHER SOFT TISSUE [0]C49, C461, [9]171		<5			
DISEASES OF BLOOD AND BLOOD-FORMING ORGANS [0]D510, D460-D464, D50, D511-D519, D52-D64, D65-D69, D70-D75, D77, D467-D469, D892, I88, R72, [9]281, 2810-2819, 282-289	78	5		25	183
MN LIP, ORAL CAVITY AND PHARYNX [0]C00-C14, C462, [9]140-149	77	5		25	179
MN LYMPHATIC AND HEMATOPOIETIC TISSUE [0]C81, C463, C82-C85, C880, C883, C914, C96, C887, C889, C90, C910-C913, C915-C919, C92-C95, [9]200-208, 2733	75	24		48	111
ALZHEIMER'S AND OTHER DEGENERATIVE DISEASE [0]G30-G32, [9]290, 3310, 3311	75	9		34	143
MN BREAST [0]C50, [9]174, 175	72	25		46	106
PNEUMONIA [0]A481, J12-J18, [9]480-486	72	12		37	127
DISEASES OF LIVER [0]K70-K77, [9]570-573	72	35		50	101
STRIKING AGAINST OR STRUCK BY OBJECTS OR PERSONS [0]W20-W22, W51, [9]917		<5			
BRAIN AND NERVOUS SYSTEM, ALL NEOPLASMS EXCEPT SECONDARY [0]C70-C72, D33, D42-D43, [9]191-192, 225, 2375-2379, 2396-2397	71	11		35	126
MULTIPLE MYELOMA [0]C887, C889, C90, [9]203		<5			
OTHER ILL-DEFINED AND UNKNOWN CAUSES OF MORTALITY [0]R090, R092, R450, R53, R564, R69, R99, [9]799	67	9		31	127
CIRRHOSIS & OTHER CHRONIC LIVER DISEASE [0]K70, K73-K74, K760, [9]571	65	25	p<0.05	42	96
PARKINSON'S DISEASE (GROUPED) [0]G20-G22, [9]332		<5			
PARKINSON'S DISEASE [0]G20-G22, [9]332		<5			
SYSTEMIC LUPUS ERYTHEMATOSUS (SLE) [0]M32, [9]7100		<5			
ARTHRITIS & SPONDYLITIS [0]M00-M11, M120-M121, M125-M128, M13-M19, M45, M460-M461, M465-M469, M47, M481-M484, M488, [9]274, 711-716, 720-721		<5			
OTHER HEART DISEASE (PERICARDITIS, ENDOCARDITIS, MYOCARDITIS, ETC.) [0]I30-I33, I40, I50, I510-I512, I514-I515, I517-I521, I970-I971, I978-I979, [9]420-423, 428, 4290-4291, 4293-4299	63	14		35	106
MN OF OTHER AND UNSPECIFIED SITES [0]C69-C80, [9]190-199	61	23	p<0.05	39	92
LYMPHATIC LEUKEMIA [0]C91, [9]204		<5			
CHRONIC DISEASE OF ENDOCARDIUM [0]I34-I38, [9]424		<5			
ACCIDENTAL FALLS [0]W00-W19, [9]880-888	60	6		22	131
MN BILIARY PASSAGES, LIVER, AND GALL BLADDER [0]C22-C24, [9]155-156	56	9		26	106

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
MENTAL DISORDERS RELATED TO ALCOHOL ABUSE [0]F10, [9]291, 303, 3050	55	5		18	128
ALCOHOLISM [0]F10, G312, [9]291, 303, 3050	54	5		18	126
MN BRAIN [0]C71, [9]191	52	7		21	107
MN RECTUM, RECTOSIGMOID JUNCTION AND ANUS [0]C19-C21, [9]154		<5			
MN GALLBLADDER AND EXTRAHEPATIC BILE DUCTS [0]C23-C24, [9]156		<5			
MN BRAIN AND NERVOUS SYSTEM [0]C47, C70-C72, [9]191-192	51	7		20	104
MOTOR VEHICLE TRAFFIC-PASSENGER [0]V205, V215, V225, V235, V245, V255, V265, V275, V285, V295, V306, V316, V326, V336, V346, V356, V366, V376, V386, V395, V406, V416, V426, V436, V446, V456, V466, V476, V486, V495, V506, V516, V526, V536, V546, V566, V576, V586, V595, V606, V616, V626, V636, V646, V666, V676, V686, V695, V706, V716, V726, V736, V746, V756, V766, V776, V786, V795, V831, V841, V851, V861, [9]8101, 8103, 8111, 8113, 8121, 8123, 8131, 8133, 8141, 8143, 8151, 8153, 8161, 8163, 8171, 8173, 8181, 8183, 8191, 8193		<5			
FALLS INTO HOLE, ONE LEVEL TO ANOTHER OR TO SAME LEVEL [0]W00-W09, W14-W18, [9]883-886		<5			
ASSAULT AND HOMICIDE [0]X85-X99, Y00-Y09, Y35, Y871, [9]960-978	47	14	p<0.01	26	78
MENTAL DISORDERS RELATED TO SUBSTANCE ABUSE [0]F10-F19, [9]291-292, 303-305	42	6	p<0.05	16	92
PNEUMOCONIOSES (OCCUPATIONAL LUNG DISEASES) (COAL, ASBESTOS, SILICA, DUST, COTTON, OTHER) [0]J60-J66, J68-J70, [9]500-508		<5			
MN MALE GENITAL ORGANS [0]C60-C63, [9]185-187		<5			
LEUKEMIA AND ALEUKEMIA [0]C910-C913, C915-C919, C92-C95, [9]204-208	39	5	p<0.05	13	91
MN OVARY AND OTHER UTERINE ADNEXA [0]C56, C570-C574, C578, [9]183		<5			
MN PROSTATE [0]C61, [9]185		<5			
MOTOR VEHICLE TRAFFIC-PEDESTRIAN [0]V021, V031, V041, V092, [9]8107, 8117, 8127, 8137, 8147, 8157, 8167, 8177, 8187, 8197		<5			
UNSPECIFIED FALLS [0]W19, [9]887-888, 9293		<5			
MN STOMACH [0]C16, [9]151		<5			
OTHER GENITO-UNINARY SYSTEM DISEASES [0]N02, N06, N130-N135, N137-N139, N25, N27-N28, N30-N32, N340, N342-N349, N35-N36, N390, N392, N398-N399, R31, [9]588-589, 591, 593, 595-599		<5			
MENTAL DISORDERS RELATED TO DRUG ABUSE [0]F11-F19, [9]292, 304		<5			
DRUG-RELATED DEATHS [0]F11-F19, [9]292, 304, 3052-3059, 850-858, 9500-9505, 9620, 9800-9805		<5			
ACUTE MYELOID LEUKEMIA [0]C920, [9]2050		<5			
VIRAL HEPATITIS A [0]B15, [9]0700, 0701		<5			
VIRAL HEPATITIS B [0]B16, [9]0702, 0703		<5			
SARCOIDOSIS [0]D86, [9]135		<5			
MN LIP [0]C00, [9]140		<5			
MN OTHER PARTS BUCCAL CAVITY [0]C03-C08, C462, [9]142-145		<5			
MN SALIVARY GLANDS [0]C07-C08, [9]142		<5			
MN SMALL INTESTINE, INCLUDING DUODENUM [0]C17, [9]152		<5			

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
MN PERITONEUM & OTHER DIGESTIVE ORGANS [0]C26, C48, [9]158-159		<5			
MN NASAL CAVITIES, MIDDLE EAR AND ACCESSORY SINUSES [0]C30-C31, [9]160		<5			
MN PERITONEUM AND PLEURA [0]C384, C48, [9]158, 163		<5			
MN PLEURA (80% MESOTHELIOMA IN MALES) [0]C384, [9]163		<5			
MN KAPOSI SARCOMA (no codes before 1999) [0]C46		<5			
MN OTHER AND UNSPECIFIED FEMALE GENITAL ORGANS [0]C51-C52, C577, C579, [9]184		<5			
MN PENIS AND OTHER MALE GENITAL ORGANS [0]C60, C63, [9]187		<5			
MN SCROTUM [0]C632, C639, [9]1877, 1879		<5			
MN EYE [0]C69, [9]190		<5			
BENIGN NEOPLASMS OF EYE, BRAIN AND CNS [0]D31-D33, [9]224-225		<5			
POLYCYTHEMIA VERA [0]D45, [9]2384		<5			
PERNICIOUS ANEMIAS [0]D510, [9]2810		<5			
APLASTIC ANEMIA [0]D60-D61, [9]284		<5			
NON-AUTOIMMUNE AND UNSPECIFIED HEMOLYTIC ANEMIAS [0]D592, D593, D594, D599, [9]2831, 2839		<5			
OTHER AND UNSPECIFIED APLASTIC ANEMIA [0]D618, D619, [9]2848, 2849		<5			
AGRANULOCYTOSIS [0]D70, [9]2880		<5			
METHEMOGLOBINEMIA [0]D74, [9]2897		<5			
ANEMIAS OF OTHER & UNSPECIFIED TYPE [0]D460-D464, D50, D511-D519, D52-D64, [9]280, 2811-2819, 282-285		<5			
MENTAL DISORDERS ASSOCIATED WITH SOLVENT EXPOSURE [0]F18, [9]292, 3059, 3046, 2940		<5			
NON-PSYCHOTIC DISORDERS [0]F40-F69, F80-F99, [9]300-302, 304, 3051-3059, 306-319, 7836, 7846		<5			
NEUROTIC AND PERSONALITY DISORDERS [0]F40-F48, F60-F69, [9]300-301, 306, 308-309		<5			
EPILEPSY [0]G40-G41, [9]345		<5			
DISORDERS OF THE PERIPHERAL NERVOUS SYSTEM [0]G50-G73, [9]350-359		<5			
TOXIC ENCEPHALOPATHY [0]G92, [9]3483		<5			
MYONEURAL DISORDERS [0]G70-G73, [9]358		<5			
RAYNAUD'S SYNDROME [0]I730, [9]4430		<5			
ACUTE RESPIRATORY INFECTIONS EXCEPT INFLUENZA & PNEUMONIA [0]J00-J01, J028-J029, J038-J039, J04-J06, J20-J22, [9]460-466		<5			
HYPERSENSITIVITY PNEUMONITIS (FARMERS LUNG, BAGASSOSIS, BIRD LUNG, SUBEROSIS, MALTWORKERS, MUSHROOM, MAPLEBARK, VENTILATORY FUNGI, OTHER) [0]J67, [9]495		<5			

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
COALWORKERS' PNEUMOCONIOSIS [0]J60, [9]500		<5			
ASBESTOSIS [0]J61, [9]501		<5			
SILICOSIS [0]J62, [9]502		<5			
OTHER AND UNSPECIFIED PNEUMOCONIOSES (ALUMINIUM, BERYLLIUM, BYSSINOSIS, ETC.) [0]J63-J64, [9]503-505		<5			
PNEUMOCONIOSIS DUE TO OTHER INORGANIC DUST (ALUMINUM, BERYLLIUM, BAUXITE, ETC.) [0]J63, [9]503		<5			
PNEUMOPATHY DUE TO INHALATION OF SPECIFIC ORGANIC DUST (BYSSINOSIS, CANNABINOSIS, FLAX) [0]J66, [9]504		<5			
LUNG CONDITIONS DUE TO SOLIDS, FUMES, VAPORS, RADIATION-□EXCLUD FOOD INHALATION [0]J68, J691, J698, J70, [9]506, 5071, 5078, 508		<5			
RESPIRATORY CONDITIONS DUE TO CHEMICAL FUMES, VAPORS, OILS, ESSENCES & SOLIDS [0]J68, J691, [9]506, 5071		<5			
RESPIRATORY CONDITIONS DUE TO CHEMICAL FUMES AND VAPORS [0]J68, [9]506		<5			
PEPTIC ULCER [0]K27, [9]531-534		<5			
ACUTE LIVER FAILURE [0]K72, [9]570		<5			
TOXIC HEPATITIS [0]K71, [9]5733		<5			
POLYARTERITIS NODOSA AND ALLIED CONDITIONS [0]M30, [9]446		<5			
RHEUMATOID ARTHRITIS [0]M05-M06, [9]714		<5			
INFECTION OF THE KIDNEY [0]N10-N12, N136, N151-N159, [9]590		<5			
CALCULI OF URINARY SYSTEM [0]N20-N21, [9]592, 594		<5			
HYPERPLASIA OF PROSTATE [0]N40, [9]600		<5			
OTHER DISEASES OF MALE GENITAL ORGANS [0]N41-N50, [9]601-608		<5			
DISEASES OF THE BREAST [0]N60-N64, [9]610-611		<5			
DISEASES OF THE FEMALE GENITAL ORGANS [0]N70-N99, [9]614-629		<5			
CONGENITAL ANOMALIES [0]Q00-Q99, [9]740-759		<5			
CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD [0]P00-P96, [9]760-779		<5			
FALLS, LADDERS OR SCAFFOLDING [0]W11-W12, [9]881		<5			
MACHINERY [0]W24, W30-W31, [9]919		<5			
ELECTROCUTION [0]W85-W87, [9]925		<5			
EXPOSURE TO FORCES OF NATURE [0]X30-X39, [9]900-909, 9295		<5			
EXCESSIVE HEAT [0]W92, X30, [9]900		<5			
EXCESSIVE COLD [0]W93, X31, [9]901		<5			
ACCIDENTS CAUSED BY LIGHTENING [0]X33, [9]907		<5			

**Table B-2. Proportionate Mortality Ratio for Emergency Medical Techs (EMTs) & Paramedics
1999, 2003-2004, 2007-2013**

Cause of Death (ICD)	PMR	Deaths	Significance level	Lower 95% CI	Upper 95% CI
ACCIDENTS CAUSED BY STORMS, FLOODS, AND EARTH ERUPTIONS [0]X34-X38, [9]908-909		<5			
ACCIDENTAL MECHANICAL SUFFOCATION [0]W75-W77, W81-W84, [9]913		<5			
FOREIGN BODY ACCIDENTALLY ENTERING EYE OR OTHER ORIFICE [0]W44, [9]914-915		<5			
STRUCK BY FALLING OBJECT [0]W20, [9]916		<5			
ACCIDENT CAUSED BY HOT, CAUSTIC, OR CORROSIVE MATERIAL [0]X10-X19, [9]924		<5			
ACCIDENT CAUSED BY ELECTRIC CURRENT [0]X10-X19, [9]925		<5			
ACCIDENT CAUSED BY OVEREXERTION AND STRENUOUS MOVEMENT [0]X50, [9]927		<5			
MONONEURITIS OF UPPER LIMB AND MONONEURITIS MULTIPLEX [0]G560, G562, G563, [9]3540, 3542, 3543		<5			
EXPOSURE TO RADIATION [0]W88-W91, [9]926		<5			
TERRORISM (CODED 2001 ON) [0]U01-U03		<5			
[0] in Industry or Occupation column indicates the corresponding 2000 Census Code; [0] in Cause of Death (ICD) column indicates corresponding ICD-10 Disease Classification System codes.					
[9] in Industry or Occupation column indicates the corresponding 1990 Census Code; [9] in Cause of Death (ICD) column indicates corresponding ICD-9 Disease Classification System codes.					
For the PMR queries, death certificate data for decedents that died in one of the 24 U.S. states between 1999, 2003- 2004, 2007-2013 were the source of age (ages 18-90), race (black, white), sex, usual occupation and industry and underlying cause-of-death. PMRs were calculated for White and Black males and females, and all races and sexes combined to evaluate the mortality patterns for 250 cancer and acute and chronic disease categories for 350 industrial and 550 occupational categories. If a PMR is greater than 100, it is elevated; if less, it is said to be decreased. User may consult NIOSH crosswalks for ICD Revisions 8, 9, 10 and 1990-2000 Census industry and occupation category codes (1990-2000 Census industry and occupation category codes). If the number of observed deaths was less than 5, it was suppressed and is shown as <5.					

Source: CDC, 2018a

APPENDIX E

Emergency Response Standard
Small Business Advocacy Review Panel - Small Entity Representatives
Issues Document
September 17, 2021

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1. Background

OSHA is considering promulgating a new standard that would require employers to take measures to protect workers who respond to emergency incidents. The standard would seek to ensure that covered employers and workers are safer in their workplaces and appropriately prepared for emergency incidents. This standard, called Emergency Response, would cover workers who respond to emergency incidents as part of their regularly assigned duties as well as those who may be called upon, from time to time, to respond to emergencies. This new standard

would replace, in its entirety, existing 29 CFR 1910.156, Fire Brigades. It would apply only to entities that are already required to comply with Federal OSHA or state plan regulations. Many entities with emergency responders (primarily State, county and municipal government employers) do not fall under OSHA's jurisdiction.

As a program standard that is predominantly performance based, the draft Emergency Response standard parallels several existing National Fire Protection Association (NFPA) standards. Many of the draft standard's provisions are based on, or incorporate by reference, the NFPA standards. The draft standard was developed by a National Advisory Committee on Occupational Safety & Health (NACOSH) subcommittee of emergency response subject matter experts. NACOSH was established under the Occupational Safety and Health Act of 1970 (OSH Act) to advise the Secretaries of Labor and Health and Human Services on occupational safety and health programs and policies.

OSHA has convened a Small Business Advocacy Review (SBAR) Panel under the Small Business Regulatory Enforcement Fairness Act (SBREFA). The SBAR Panel has several purposes. First, the Panel provides an opportunity for affected small employers to provide comments to OSHA in advance of the formal rulemaking process. Second, by reviewing the potential provisions that might be included in an Emergency Response standard and estimates of the potential impacts of that rule, Small Entity Representatives (SERs) and the Panel can offer recommendations to OSHA on ways to tailor the rule to make it more cost effective and less burdensome for affected small entities. Third, early comments permit identification of different regulatory alternatives the agency might consider. Finally, the SBAR Panel report can provide specific recommendations for OSHA to consider on issues such as reporting requirements, timetables of compliance, and whether some groups, including small entities, should be exempt from all or part of any proposed rule.

This document contains a brief discussion of each topic OSHA is considering including in a proposed rule and initial estimates of the unit costs of complying with those provisions. This document also presents potential regulatory alternatives (both those that reduce burdens on small entities and are considered significant alternatives under the Regulatory Flexibility Act (RFA) and those that may increase burdens) and questions for SERs. This issues document is meant to serve as both a summary of the longer Preliminary Initial Regulatory Flexibility Analysis (PIRFA) and as a discussion guide for SERs participating in the teleconferences. OSHA welcomes comment on all aspects of the PIRFA, but this document focuses on specific areas of interest to the agency. Throughout the document, the Panel has listed issues, along with questions, where the Panel would appreciate SER input. However, SERs should feel free to bring up any issues they would like the Panel to consider. This document does not include discussions of wage rates or detailed calculations of total cost. If costs are incurred to purchase a good or

service, OSHA presents the estimated dollar cost of that purchase, but where costs are accounted for in additional time requirements from employees, OSHA has largely focused on the estimated time demands. The full calculations of costs, tables, and references are found in the PIRFA. It should also be noted that costs estimates in this document focus on the costs to specific establishments; a partial estimate of the aggregate costs to the entire economy can be found in the PIRFA.

The OSH Act imposes a number of requirements OSHA must satisfy before adopting a standard. Among other things, a safety standard must be highly protective, materially reduce a significant risk to workers, be technologically feasible, and be economically feasible. It is important to note that the PIRFA is only one of several analyses OSHA will conduct in developing a proposed rule. OSHA has not yet prepared a health effects analysis nor conducted a preliminary risk assessment or technological feasibility assessment. Although the PIRFA contains some information about potential risks and hazards that may be faced by firefighters and other emergency responders, OSHA has not yet made a preliminary determination about whether the regulatory provisions in the draft standard would materially reduce significant risks to workers who respond to emergency incidents or provide skilled support at emergency incidents.

2. Scope, Affected Entities, and Other Industry Characteristics

Scope

The draft Emergency Response standard would apply to employers that mitigate a hazard in an emergency response situation and the activity is currently covered by 29 CFR 1910.156, or is not covered by another OSHA standard. The standard would apply to, but not be limited to, entities that provide one or more of the following services as a primary or secondary function:

- Firefighting
- Fire rescue
- Emergency medical service
- Technical rescue (rope/high angle, cave, collapse)
- Vehicle/machinery rescue
- Water rescue/recovery (land/shore based, swiftwater, underwater)
- Search and rescue (urban, mountain, wilderness)

Also covered by the standard are general industry, construction, and maritime industry employers that expect, based on past experience providing skilled support services to ESOs, a mutual aid agreement, or a contract, to provide skilled support personnel at an emergency incident. Examples include employers who provide operators and equipment such as:

- Cranes
- Construction equipment (bulldozers, backhoes, excavators, etc.)

- Vacuum trucks
- Heavy duty wrecker/rotator tow vehicles
- Utility service (gas, water electric)
- Public health employers.

Some employers provide emergency services or designate employee tasks that are already covered by other OSHA standards and are therefore are not covered by the draft Emergency Response standard. They are:

- Employers that designate and train certain employees to assist in the orderly evacuation and rescue of other employees during an emergency in accordance with 29 CFR 1910.38, Emergency action plans, or to use portable fire extinguishers in accordance with 29 CFR 1910.38, and 1910.157, Portable fire extinguishers;
- Employers that handle small releases covered by 29 CFR 1910.119, Process Safety Management of highly hazardous chemicals (PSM), and who may also be covered by 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPR), and employers that respond to hazardous materials releases covered by HAZWOPR;
- Employers that provide medical services and first aid in accordance with 29 CFR 1910.151, Medical services and first aid;
- Employers that provide any of the following specialized types of rescue or emergency response:
 - Confined spaces rescue in accordance with 29 CFR 1910.146, Permit-required confined spaces, or 29 CFR 1926 Subpart AA, Confined spaces in construction;
 - Equipping and training grain handling employees for rescue procedures in accordance with 29 CFR 1910.272, Grain handling facilities;
 - Employers with employees who may enter trenches and other surface excavations in accordance with 29 CFR 1926 Subpart P, Excavations;
 - Shipyard fire protection in accordance with 29 CFR 1915 Subpart P, Fire protection in shipyard employment.

For example, if an employer has employees who only mitigate hazardous chemical releases in accordance with 29 CFR 1910.120 (HAZWOPR), the employer would not be covered by the draft Emergency Response standard since these activities are already regulated by an OSHA standard, and the employer would have no obligation to comply with the draft standard. But, if the employer's HAZWOPR responders are also firefighters on the fire brigade (an activity not

covered by HAZWOPR), then the employer would have to comply with the draft Emergency Response standard, with respect to the employees' duties as firefighters.

This standard would not apply to employers during post-emergency incident activities (which begins when emergency incident command is terminated by the Incident Commander (IC) or Unified Command). Any employers whose employees remain at the location of the incident during post-emergency incident activities would comply with all other OSHA standards (Parts 1910, 1926) as appropriate to the industry.

Coverage of Public Employees in State Plan States and Volunteer Responders

The OSHA standard does not apply to all public sector emergency responders. The scope is limited to Emergency Service Organizations (ESOs) and responders under OSHA's jurisdiction. Only public ESOs that are in state plan states are under OSHA's jurisdiction and therefore the analysis excludes public ESOs and responders in non-state-plan states. The following states and territories have state plans and public ESOs in these states are therefore covered by the draft standard:

- Alaska
- Arizona
- California
- Connecticut
- Hawaii
- Illinois
- Indiana
- Iowa
- Kentucky
- Maine
- Maryland
- Michigan
- Minnesota
- New Jersey
- New Mexico
- New York
- Nevada
- North Carolina
- Oregon
- Puerto Rico
- South Carolina
- Tennessee
- Utah
- Vermont
- Virginia
- Washington
- Wyoming

An unusual aspect of the draft standard is that many emergency responders are unpaid volunteers rather than paid employees. Some state plans cover volunteers and some do not. OSHA has preliminarily determined that the following state plan states do not consider volunteers to be employees and therefore do not extend OSHA protections to volunteers.

- Connecticut
- Maryland
- North Carolina
- Vermont
- Wyoming
- Kentucky
- New Mexico
- Tennessee
- Virginia

OSHA has preliminarily determined that there are approximately 5,200 volunteer firefighting ESOs, 200 separate Emergency Medical Services (EMS) ESOs, 173,000 volunteer firefighting responders and 14,000 volunteer ambulance responders in OSHA state plan states that extend occupational safety and health coverage to volunteers.

ISSUES

OSHA welcomes comments on the issue of who would be covered by a draft Emergency Response standard. Is it appropriate to include all employers that are currently identified as being included? If so, please explain why.

Should any types of employers or entities currently included be excluded from the draft standard? If so, please explain why.

Has OSHA has not to identified any industries or emergency service providers that would or should be included but are not? Please identify them and give your reasons why they would or should be included.

Do you understand how OSHA intends to cover or not cover emergency services where other OSHA standards address those activities?

The agency welcomes suggestions on how to clarify anything you find confusing or potentially confusing.

Affected Entities

Combined Fire Department and Emergency Medical Service Profile

Table 1 summarizes the number of ESOs and responders in the scope of this analysis; the number of ESOs that are considered small by either the RFA definitions (for public ESOs) or Small Business Administration (SBA) definitions (for private ESOs); the number of ESOs that are considered very small (those with fewer than 20 employees) and the number of responders who work at those various size ESOs. Appendix A to this document summarizes the industry profile estimates. Full calculations and estimates and additional details are available in the PIRFA.

Table 1 - Combined Fire Department and Emergency Medical Service Profile – Summary

Employment Size Class	Total in Scope		RFA/SBA Small		< 20 Responders	
	ESOs	Responders	ESOs	Responders	ESOs	Responders
Fire Departments						
<25	4,296	73,050	4,294	72,302	1,897	23,247
25-49	4,879	154,364	4,879	154,364	0	0
50-99	1,686	105,775	1,346	77,960	0	0
100-249	567	77,711	24	3,434	0	0
250-499	100	33,339	2	600	0	0
500+	59	80,251	0	0	0	0
Total	11,587	524,489	10,545	308,660	1,897	23,247
Emergency Medical Services						
<25	4,126	45,539	3,615	13,694	3,592	32,177
25-49	1,210	47,732	1,061	14,324	0	0
50-99	615	48,831	538	14,811	0	0
100-249	342	57,243	298	17,481	0	0
250-499	108	35,795	94	10,983	0	0
500+	187	129,885	12	24,289	0	0
Total	6,589	365,025	5,619	95,581	3,592	32,177
Total						
<25	8,422	118,589	7,909	85,996	5,489	55,424
25-49	6,089	202,096	5,940	168,688	0	0
50-99	2,301	154,606	1,884	92,771	0	0
100-249	909	134,953	322	20,915	0	0
250-499	208	69,134	96	11,583	0	0
500+	246	210,136	12	24,289	0	0
Total	18,176	889,514	16,164	404,241	5,489	55,424

Sources: See PIRFA

Note: See PIRFA for full notes.

How Are Small Entities Defined?

For the purposes of SBREFA, publicly owned fire departments and EMS providers are classified as small if they are controlled by a government serving a population of less than 50,000 people. OSHA lacks data precisely identifying the number of small ESOs controlled by governments and how many people they each employ. To estimate these numbers, OSHA relied on available data from ESOs that serve larger populations and extrapolated the numbers (using median population served per firefighter) to estimate the allocation of firefighters among small governmental entities. For this estimate, the agency relied on registry data from Firehouse Magazine and the U.S. Fire Administration.

Lacking data on the distribution of EMS ESOs by size, OSHA calculated that distribution by assuming that the distribution of EMS ESOs and firefighting ESOs are similarly distributed across size categories and applying the ratio of the number of fire departments serving various

population sizes to the total number of fire departments and the total number of EMS ESOs, as detailed in the PIRFA.

There are potentially many affected private entities across a wide range of North American Industry Classification System (NAICS) industry codes. For purposes of the PIRFA, OSHA is classifying private entities as small if they have less than 500 employees. This cutoff is based on size classifications from the SBA.

In addition, OSHA estimates there are approximately 30,000 privately employed fire fighters in the U.S., mostly in NAICS 561, Administrative and Support Services.

OSHA's preliminary analysis suggests that the majority of regulated entities meet the RFA/SBA definitions of small entities.

Skilled Support Employers (SSE)

Under OSHA's draft Emergency Response standard, an SSE is defined as an entity whose primary function is something other than providing an emergency service, but who designates one or more employees to provide a service at the scene of an emergency incident. Examples include employers who provide cranes, heavy duty wrecker/rotator tow vehicles, construction equipment, or utility and public health services. While detailed data are available regarding the establishments and employees in industries that might provide these services in general, no information is currently available to characterize or profile the numbers of entities or employees that have arrangements with emergency service organizations to provide such services on a periodic or an ongoing basis.

ISSUES

As an ESO, do you have advance agreements in place for skilled support services to help at the site of an emergency when needed? If so, with what type(s) of support services do you have an agreement and for what support services? Are these agreements formal (written) or informal (standing relationship)? How common are these agreements? If you do not have any agreements in place, do you ever use skilled support services on an ad hoc basis? If so, what type(s) of support services do you use? How commonly do you use these services?

As a SSE, do you have advance agreements in place to provide services to ESOs? If so, what type(s) of agreement(s) do you have? Are these agreements formal (written) or informal (standing relationship)? To what extent do these agreements involve requirements similar to those in the draft standard? Would you be willing to continue working with your ESO if you could only do so if you met these kinds of requirements?

OSHA welcomes comment on how many skilled support employers and skilled support workers would be impacted by the draft rule as currently written, and as discussed in the alternatives.

Regulatory Alternatives Addressing the Scope of the Draft Standard - ESOs:

These alternatives would alter the scope of the draft standard, removing some of the ESOs (and associated responders) from coverage. This first set of alternatives would either fully exempt all-volunteer ESOs, or exempt smaller ones that serve populations below various sizes from the scope of an Emergency Response standard. OSHA recognizes that volunteer ESOs have a limited revenue stream. Most are dependent on donations from the residents and small businesses in their communities to cover the ESO's operating costs and expenses. They generate donations by conducting various fundraising activities, such as bake sales, pancake breakfasts, spaghetti dinners, fund drive mailers, raffles, bingo nights, carnivals, etc. Some volunteer ESOs receive limited funding from the local government based on a "fire tax" or "EMS tax." OSHA understands that some volunteer ESOs may not be able to absorb some of the costs to comply with all the provisions of the potential standard.

PIRFA Alternative 1: Exempt ESOs whose responders are all volunteers.

Under this alternative, 186,234 responders at 5,439 all-volunteer ESOs in state-plan states would be completely exempt from the rule.

PIRFA Alternatives 2(a)-2(e): Exclude some all-volunteer ESOs from the draft standard based on the size of the population served.

Alternatives 2(a) – 2(e) are as follows:

2(a) Exempt volunteer ESOs if the population served is less than or equal to 2,500

This alternative would completely exempt the ESOs that serve a population less than or equal to 2,500, or an estimated 12 ESOs and 80 responders.

2(b) Exempt volunteer ESOs if the population served is less than or equal to 5,000

This alternative would completely exempt the ESOs that serve a population less than or equal to 5,000, or an estimated total of 100 ESOs and 631 responders.

2(c) Exempt volunteer ESOs if the population served is less than or equal to 10,000

This alternative would completely exempt the ESOs that serve a population less than or equal to 10,000, or an estimated total of 871 ESOs and 12,237 responders.

2(d) Exempt volunteer ESOs if the population served is less than or equal to 25,000

This alternative would completely exempt the ESOs that serve a population less than or equal to 25,000, or an estimated total of 4,049 ESOs and 99,769 responders.

2(e) Exempt volunteer ESOs if the population served is less than or equal to 50,000

This alternative would completely exempt the ESOs that serve a population less than or equal to 50,000, or an estimated total of 5,002 ESOs and 148,936 responders.

ISSUES

Are OSHA's estimates of number of affected firefighters and the categories they belong in reasonable? If not, please explain. Are there other sources OSHA should look at?

The Panel welcomes feedback on these alternatives. Are there populations of responders that face less risk and could therefore be exempted from an Emergency Response standard? If so, please identify them. If you believe some ESOs could or should be exempt from this draft standard, what would you recommend the threshold be for this exemption?

Should OSHA consider exemptions or modifications based on whether an ESO is all volunteer or should small combination or small career departments be exempted or have modified requirements? Please explain why.

The Panel also welcomes input on the possible impacts of the draft standard on ESOs in the various categories and sizes of affected entities. The Panel is interested in any ways the draft standard might impact the ability of ESOs to serves their communities.

3. Regulatory Summary and Costs

The following paragraphs discuss potential requirements for the draft standard. However, not all paragraphs apply to all employers covered by the rule. Some paragraphs apply to ESO employers whose workers respond to emergency situations as part of their regularly assigned duties. This would include employers with workplace emergency response teams. Other paragraphs apply to SSEs who provide Skilled Support Workers (SSW) and equipment to assist emergency responders at incident scenes. The ESO paragraphs do not apply to SSEs, and the SSE paragraphs do not apply to ESOs. For each provision, we have provided information on the aggregate costs and alternatives to that provision that OSHA is considering.

OSHA estimates that the total costs of the draft standard would be \$656 million per year. Of that total, OSHA preliminarily estimates that the cost to SBA/RFA defined small entities would be \$405 million per year and the cost to very small entities with fewer than 20 employees would be \$78 million per year. OSHA has preliminarily estimated that the average cost per fire department with fewer than 25 responders would be about \$26,000 annually, about \$37,000 annually for a

department with 25-49 responders, and about \$48,000 for a department with 50-99 responders (calculated using a 3 percent discount rate and 10-year time horizon). For emergency medical services ESOs, OSHA estimates that an ambulance ESO with fewer than 25 responders would have costs of about \$12,000 annually, about \$28,000 annually for an ambulance ESO with 25-49 responders, and \$48,000 for an ambulance ESO with 50-99 responders (calculated using a 3 percent discount rate and 10-year time horizon). Additional details are presented in Appendix B and in PIRFA tables VI-12, VI-13, and VI-14 and VI-15.

OSHA has not estimated total costs for SSEs due to lack of data regarding the number and types of SSEs and current industry practices. Unit costs and examples of per entity costs for a model SSE are presented in Appendix B.

The following paragraphs apply to employers that are, by definition, Emergency Service Organizations (ESO).

Establishment of Emergency Service(s) Capability

This provision would require an ESO to conduct a community or facility vulnerability and risk assessment for its service area; evaluate the resources needed, including personnel and equipment, for mitigation of emergency incidents identified in the assessment; and establish the type(s) and level(s) of emergency service(s) the ESO is capable of performing. For the purposes of this draft standard, an ESO whose primary service area is a community (municipality, county, parish, region, state) would assess the community it serves. An ESO whose primary service area is, for example, a manufacturing or processing facility, a military facility, or a research and development facility would assess that facility.

The assessment would include the following considerations:

- Civilian and worker injury or loss of life;
- Property damage or loss;
- Critical infrastructure damage or loss; and
- Environmental damage or loss.

Factors taken into account when developing the assessment would include:

- Size, height, construction types and configuration of buildings;
- Special life safety risks, for example: hospitals, nursing homes, prisons, etc.;
- Proximity between structures;
- Occupancy classifications;
- Fixed facilities;

- Transportation modes; and
- Other hazards.

The community or facility vulnerability and risk assessment process would identify the Authority Having Jurisdiction (AHJ) for command responsibility during mitigation activities, and ensure all activities occur within the framework of the existing AHJ, legislation, and other legal restrictions. The vulnerability and risk assessment would identify how the ESO incorporates itself into large-scale mitigation efforts managed by Federal or State agencies that have the authority to manage larger scale incidents.

The ESO would evaluate the resources needed, including personnel and equipment, for mitigation of emergency incidents identified in the community or facility vulnerability and risk assessment, and establish the type(s) and level(s) of emergency service(s) it is capable of performing.

The type of service identifies the broad category of service to be provided; for example, firefighting, technical rescue, or emergency medical service. The level of service identifies narrow categories of service to be provided within each type. For example:

Firefighting (type of service)

Incipient (level of service)

Interior (level)

Exterior (level), etc.

Emergency Medical Service (type of service)

Basic life support emergency response and transport – ground based (level of service)

Advanced life support emergency response and transport – ground based (level), etc.

Additionally, within the type and level of service designated, the ESO would need to establish tiers of responder responsibilities, duties, qualifications and capabilities. Each tier in ascending order would have a higher level of training/certification needed, and more complex duties assigned, than the previous tier. In the first example below, a responder in the Technician tier would be trained and/or certified, as appropriate, to perform all the duties of the lower tiers: Operation, Awareness, and Support. The Support tier would need minimal training and have the least complexity of responsibilities. Examples of tiers include:

- Fire/Rescue
 - Technician
 - Operation
 - Awareness
 - Support
- Emergency Medical Services
 - Physician

- Nurse
 - Paramedic
 - Advanced EMT
 - EMT
 - EMR
 - Support

*[Note: The concepts in the preceding paragraphs are carried through the rest of the draft standard. Essentially, almost everything the ESO would be required to do is based on the **type(s)** and **level(s)** of emergency service(s) it provides. Requirements specific to responders, such as medical, fitness, training, and certifications, are determined based on the differences between **tiers** of assigned duties and responsibilities.]*

Based on the assessment, the ESO would determine what services its service area needs that it is unable to provide, identify how those service(s) can be provided through neighboring ESOs, and develop written mutual aid agreements. The mutual aid agreements would need to include, but not be limited to, the following issues:

- Legal authorizations;
- When and how to request assistance;
- Operating procedures;
- Prohibitions against self-deployment to an incident in another ESO's jurisdiction;
- Liabilities for injuries, disabilities, and deaths;
- Cost of service;
- Staffing and equipment, including the resources to be made available;
- The designation of the incident commander; and
- Responder training and qualifications.

Occasionally, the ESO may need to call for services that are beyond the scope of typical emergency services. In those situations, the ESO may require the services of an entity that is able to provide skilled support. Again, based on the assessment, the ESO would identify what service(s) would be needed from an SSE. The ESO would:

- Identify the type(s) of skilled support the ESO anticipates it will need.
- Develop written service agreements/contracts with the SSE(s).
- Ensure the SSE is advised of likely responses.
- Provide SSEs with information regarding services, required and special equipment, personal protective equipment (PPE) needs, and other information as may be needed.

This is the point where the ESO/SSE relationship begins; in advance, during the ESO's preparation for anticipated events. This is the point where the SSE would need to determine if it can meet the requirements of being an SSE (in accordance with the requirements below) and enter into an agreement/contract with the ESO to be an SSE. In some situations, the skilled support entity may have previously provided skilled support at an emergency incident and can anticipate being designated as an SSE subject to the regulatory requirements based on prior patterns of engagement with ESOs.

Organization Risk Management Plan

The ESO would also be required to develop a comprehensive risk management plan for the organization itself. This plan would cover, at a minimum, risks associated with:

- Administration;
- Facilities;
- Training;
- Vehicle operation;
- Personal protective equipment;
- Operation at emergency and non-emergency incidents; and
- Other related activities.

The plan would include, at a minimum, the following components:

- Hazard identification – actual and potential hazards;
- Risk evaluation – likelihood of occurrence of a given hazard and severity of consequences;
- Establishment of priorities for action – the degree of a hazard based upon the frequency and risk of occurrence;
- Risk control techniques – solutions for elimination or mitigation of potential hazards; implementation of best solution;
- Risk management monitoring – evaluation of effectiveness of risk control techniques;
- Personal Protective Equipment hazard assessment;
- Respiratory protection for responders that meets the requirements of §1910.134;
- Infection control, equivalent to the requirements of NFPA 1581, 2015 ed., that identifies, limits, or prevents the exposure of responders to infectious and contagious diseases; and
- Protection for responders from bloodborne pathogens that meets the requirements of §1910.1030.

OSHA estimates that these provision would cost \$13 million per year for all affected entities. OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B.

ISSUES

Do all establishments have the technical capabilities necessary to meet these requirements?

Do SERs currently develop formal plans that outline their emergency services capabilities? If not, do you have informal plans, for example as part of your ESO's institutional knowledge?

Does your ESO have any formal (written) mutual aid agreements? Any informal (standing relationship) agreements? Do you think it is necessary that mutual aid agreements be in writing? Why or why not? If you do not have mutual aid agreements (written or standing) with neighboring ESOs, do the ESOs still provide assistance when called upon? Do you think there are additional elements that OSHA should require being part of the mutual aid agreements?

Do you believe that ESOs are able to develop the establishment of services capability and community/facility vulnerability and risk assessment components of the Emergency Response program without the help of hired consultants? If you believe consultants will be necessary – what parts of the program development do you envision being difficult for ESOs to develop on their own? What sorts of assistance could OSHA offer to help assure that ESOs could develop the necessary program on their own without needing to hire outside consultants?

To what extent does your ESO have a tier system to establish different level of training, medical requirements, fitness requirements, etc.? If not, do you anticipate it would be difficult to develop such a system? Do you agree that employees at the higher tier level should be trained to perform all of duties of the lower tiers?

Responder Medical/Fitness Requirements

This provision of the draft standard would, based on the type and level of service(s) established by the ESO, require the ESO to establish minimum medical requirements based on the tiers of responder duties, tasks, and responsibilities. A qualified healthcare professional would perform the medical evaluation of the responders. The medical evaluation would include a medical and vaccination history, physical examination, and any laboratory tests required to detect physical or medical conditions that could adversely affect the responder's ability to safely perform the essential job functions.

Components of the medical evaluation program would comply with the corresponding requirements of §1910.95, Occupational noise exposure; §1910.134, Respiratory protection; and §1910.1030, Bloodborne pathogens. The medical evaluation would be performed on each

responder as a baseline for surveillance and annually thereafter. Also, each responder would be evaluated following an occupational exposure, illness, injury, or protracted absence from the job.

The draft standard would also require the ESO to establish minimum physical performance requirements for responders and ensure responders meet the requirements before beginning training or becoming a responder if already trained.

To develop and maintain a level of fitness that allows responders to safely perform their duties, the ESO would be required to implement a health and fitness program as determined by a qualified health care professional. The program would include at least the following components: assignment of a health and fitness coordinator; periodic (not to exceed 3 years) fitness assessment of each responder; exercise training; education and counseling regarding health promotion; and a process for collecting and maintaining health-related fitness data. OSHA has never before required a health and fitness program in the workplace. These provisions of the draft standard are based on NFPA provisions and were recommended by the NACOSH subcommittee.

This provision of the draft standard would also require ESOs to provide access for responders to a confidential behavioral health and wellness program that would include the following components as a minimum: the capability to provide assessment; access or referral to basic counseling (at this time, OSHA does not intend to require ESOs to bear the costs for responders to attend counseling); crisis intervention training; referral to services that would provide an assessment that includes alcohol and substance abuse, stress and anxiety, depression, and personal problems that affect work performance; prevention strategies and health promotion activities related to identified risk factors for emergency responders' health and safety; and protocols to address occupational exposure to atypically stressful events. OSHA has never before required behavioral health and wellness programs in the workplace. These provisions of the draft standard are based on NFPA provisions and were recommended by the NACOSH subcommittee.

Under the draft standard, the ESO would also maintain a permanent health database for analysis of factors pertaining to the overall group of its responders, as well as a confidential file for each responder.

The physical and mental health provisions (including initial and periodic medical screening and surveillance, health database, physical performance plan and implementation, health and fitness plan and implementation, and fitness for duty assessment, and behavioral health and wellness program) are the most expensive provisions of the standard. OSHA estimated new costs of \$253 million per year for ESOs to comply with this draft provision. Of that total, periodic medical surveillance is estimated to cost \$173 million per year for ESOs; fitness for duty provisions are estimated to cost \$27 million per year; initial medical surveillance is estimated to cost \$23 million per year; implementation of the health and fitness program is estimated to cost \$17

million per year; and establishing the behavioral health and wellness program is estimated to cost about \$3.3 million per year (using a 3 percent discount rate and 10-year time horizon). OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B for reference.

OSHA's estimates for the physical and mental health provisions include the time for Fire Chiefs or EMDs to develop minimum medical and physical performance requirements; enter data into a health database; develop a physical performance rehabilitation program; establish and implement a health and fitness program; and for Firefighters or EMTs/Paramedics to obtain medical assessments for the initial and periodic surveillance requirements and fitness for duty assessments. OSHA did not estimate any potential costs to develop the confidential health database (such as costs associated with computer programming or review by privacy or legal experts), time spent by emergency responders to participate in rehabilitation or health and fitness programs, or any costs associated with situations where there is a fitness for duty requirement that is not met. OSHA assumes that the health and fitness coordinator, fitness assessor, exercise trainer functions would be performed in-house; that ESOs will not need additional exercise equipment; and that employee rehabilitation and fitness activities would be conducted in otherwise unproductive downtime. OSHA assumes there will not be additional labor costs, such as for additional staffing if a firefighter were to be suspended for failure to meet fitness for duty requirements or overtime, associated with these provisions.

OSHA estimate of costs for the behavioral health and wellness program is limited to the time of a Fire Chief or EMD to identify such a program to participate in. OSHA did not estimate any potential costs associated with contracting for behavioral health and wellness provider services, such as to provide the required crisis intervention training, development of prevention strategies, and health promotion activities and protocols.

OSHA's draft standard as written assumes that ESOs would follow the NFPA 1582 standard's requirements for medical screening and surveillance. It is possible that some types of medical screening and surveillance may have a minimal impact on protecting responders from significant occupational risks. If this were determined to be the case, some tests or group of tests could remain as recommended by the consensus standard but would not be required under an OSHA standard. OSHA has grouped different medical screening and surveillance elements into "modules" to show potential cost decreases, but any individual tests detailed in Appendix C could be included or excluded. OSHA welcomes input from the SERs on which individual types of screening and surveillance, if any, should be included or excluded.

In the following table (Table 2), the initial general health assessment includes the cost of a responder's time to receive the exam, plus the cost of an office visit with a healthcare provider, an audiogram, and a chest X-ray. The cost for cardiopulmonary function includes the cost of an EKG and spirometry. The cost for the initial immunological components of medical surveillance

includes a tuberculosis skin test and a Hepatitis C screening. The periodic health assessment would occur annually and includes the cost of an employee’s time to receive the exam, an office visit, and an audiogram.

The periodic cancer screening cost includes the cost for mammography, colonoscopy, lung cancer screening using low-dose CT, blood tests, urinalysis, and prostate cancer screening. When calculating the cost per responder for periodic cancer screenings, OSHA took into account how many responders, based on responder characteristics such as age, sex, smoking status, etc., would receive a given type of cancer screening.

The cost for the periodic immunological components includes the cost of a TB screening, HIV screening, immunizations (influenza, TDAP, MMR, varicella, Hepatitis A/B), and immunization administration.

It should be emphasized that the unit costs presented in Table 2 contain all the potential elements of testing simultaneously; the average responder would be receiving only a fraction of those tests since many are included only for certain subsets of the population (for example, colon cancer screenings would only be provided to responders who are over 50 and breast cancer screenings would be provided only to female responders). The total unit cost for periodic tests for firefighters is about \$1,400, but the average firefighter would only be receiving about a quarter of those tests, for an effective unit cost of about \$340 per average firefighter. There will, of course, be substantial variations for individual circumstances in a given year. For example, a “typical” 50 year old male firefighter might have over \$600 in periodic screening expenses in a given year, but approximately one-third of that might be once-in-a-decade screening procedures such as a colonoscopy and TDAP booster.

Table 2 - Summary of Costs of Each Medical Surveillance Component

Exam	Responders	% Receiving	Unit Cost (for All Potential Exams)	Average Unit Cost (% Receiving × Unit Cost)
Fire Departments				
Initial Medical Surveillance				
General Health Assessment	524,489	100%	\$239	\$239
Cardiopulmonary Function	524,489	84%	\$54	\$45
Immunological	524,489	100%	\$53	\$53
<i>Initial Subtotal</i>	<i>524,489</i>	<i>97%</i>	<i>\$347</i>	<i>\$338</i>
Periodic Medical Surveillance				
General Health Assessment	524,489	100%	\$197	\$197
Cardiopulmonary Function	524,489	33%	\$54	\$18
Cancer Screening	524,489	10%	\$679	\$70
Immunological	524,489	11%	\$497	\$57
<i>Periodic Subtotal</i>	<i>524,489</i>	<i>24%</i>	<i>\$1,427</i>	<i>\$341</i>
Medical Surveillance Total				
Initial and Periodic Total	524,489	38%	\$1,773	\$679

Table 2 - Summary of Costs of Each Medical Surveillance Component

Exam	Responders	% Receiving	Unit Cost (for All Potential Exams)	Average Unit Cost (% Receiving × Unit Cost)
Emergency Medical Services				
Initial Medical Surveillance				
General Health Assessment	365,025	100%	\$223	\$223
Cardiopulmonary Function	365,025	84%	\$54	\$45
Immunological	365,025	100%	\$53	\$53
<i>Initial Subtotal</i>	<i>365,025</i>	<i>97%</i>	<i>\$330</i>	<i>\$321</i>
Periodic Medical Surveillance				
General Health Assessment	365,025	81%	\$180	\$147
Cancer Screening	365,025	1%	\$679	\$4
Immunological	365,025	9%	\$497	\$44
<i>Periodic Subtotal</i>	<i>365,025</i>	<i>14%</i>	<i>\$1,410</i>	<i>\$194</i>
Medical Surveillance Total				
Initial and Periodic Total	365,025	30%	\$1,740	\$515

Sources: See PIRFA

Notes: See PIRFA for full notes

Figures may not add to totals due to rounding.

Alternatives Addressing Medical Screening and Surveillance - ESOs:

PIRFA Alternatives 3(a) – 3(e): Exclude medical surveillance requirement or reduce the frequency for which it is required.

3(a) Remove the requirement for initial medical surveillance

This alternative would completely remove the initial medical surveillance requirement, reducing the costs by \$347 per average firefighter and \$321 per average EMS responder. This alternative would maintain periodic medical surveillance meaning that responders would receive medical surveillance screenings annually starting one year after the effective date.

3(b) Remove the requirement for periodic medical surveillance

This would completely remove the periodic medical surveillance requirement, reducing the cost by about \$341 per average firefighter and about \$194 per average EMS responder annually.

3(c) Revise frequency for periodic medical surveillance

The costs of OSHA’s draft standard are calculated assuming that responders would receive periodic medical surveillance every year. These alternatives would reduce the frequency of periodic medical surveillance from annual to every two (Alternative 3(c)(1)) or three years (Alternative 3(c)(2)). Reducing the frequency of medical exams would reduce the cost for ESOs since these costs would be incurred less frequently.

PIRFA Alternatives 4(a) – 4(d): Remove certain elements of the medical surveillance requirement.

There are various ways in which the medical surveillance provisions could be modified. For purposes of discussion, OSHA has grouped them into several modules: (a) immunological, (b) cancer surveillance, (c) cardiopulmonary screening, and (d) the base physical exam.

4(a) Medical surveillance would not include an immunological component.

This alternative would eliminate requirements for HIV and TB screening, as well as immunizations for various illnesses. This would reduce the average per responder initial unit costs by \$53 in the first year and \$57 in future years.

4(b) Medical surveillance would not include cancer-screening elements.

This alternative would remove the requirements for any tests that serve to screen for various types of cancers and would reduce the average per responder cost of periodic testing by \$70 per year.

4(c) Medical surveillance would not include cardiopulmonary test elements.

This alternative would remove the requirement for EKG and spirometry exams. This would reduce the initial per responder costs by \$45 and then \$18 per year thereafter.

4(d) Substitute a medical questionnaire for routine medical exams.

This alternative would substitute a questionnaire for a routine in-person physical, saving money by reducing medical professionals' time. This would reduce initial costs by most of the cost of the exam and the responder's time.

Alternatives Addressing Fitness and Behavioral Health and Wellness - ESOs:

PIRFA Alternatives 5(a) – 5(b): Remove or reduce requirements for assessing fitness for duty

These alternatives would remove certain fitness and behavioral health elements from the standard or reduce the frequency with which fitness for duty is evaluated.

5(a) Remove requirements to assess fitness for duty

This alternative would completely remove the requirement that ESOs assess responders for fitness for duty before beginning training or becoming a responder if already trained. This alternative would mean that responders would not receive the initial fitness assessment at the time of hiring, which OSHA estimates would take approximately one hour for the emergency responder (and whoever is performing the assessment), but would receive periodic assessments in subsequent years. If there are any costs or benefits associated with ensuring that firefighters

meet fitness for duty requirements those would be deferred from the time of hiring to future periodic assessment periods.

5(b) Revise frequency for assessing fitness for duty

These alternatives would reduce the frequency with which fitness for duty must be evaluated from annually to every two (Alternative 5(b)(1)) or three years (Alternative 5(b)(2)). It is possible that fitness for duty does not change enough on a yearly basis to necessitate annual assessments and that assessing fitness for duty every two or three years may be adequate to detect any health problems that put responders at risk.

PIRFA Alternative 6(a) – 6(b): Remove requirement for health and wellness programs

These alternatives would remove the requirements for programs addressing worker health and wellness.

6(a) Remove requirements for health and fitness programs

This alternative would completely remove the health and fitness program requirement, saving an average of two hours of a Fire Chief's time annually. OSHA's draft standard doesn't require the hiring of additional or outside personnel or the purchase of exercise equipment or any additional purchases or expenditures and OSHA expects that participation in the health and fitness program can be done by responders during otherwise nonproductive downtime. However, to the extent OSHA has not captured certain costs related to this potential provision, there may be additional cost savings related to this alternative.

6(b) Remove requirements for behavioral health and wellness programs

This alternative would completely remove the behavioral health and wellness requirement, saving an average of two hours of a Fire Chief's time annually. While OSHA expects that most ESOs will meet the requirements of this provision by making available third party counseling, crisis intervention, or other similar services, to the extent that OSHA has not considered additional costs, removing this potential requirement may result in additional costs avoided by ESOs.

Alternative Addressing the Health Database or Health File - ESOs:

PIRFA Alternative 7: Remove the requirement to maintain a confidential health database/health file for analysis of factors pertaining to the overall group of responders

This alternative would completely remove the requirement to maintain a confidential health database and health file, which would save an estimated five minutes of the Fire Chief's time per responder. To the extent OSHA did not capture certain costs related to this potential provision, there may be additional cost savings related to this alternative.

ISSUES

Does your ESO currently follow all of the medical and fitness requirements in the draft standard? Why or why not? Do you currently offer opportunities and equipment to support exercise training or health promotion resources to emergency responders? Are medical and fitness requirements necessary for all ESOs? Do you think these provisions are feasible for your organization? Why or why not?

OSHA has preliminarily estimated that it will take a fire chief five minutes per responder to establish the confidential medical database. How does this estimate compare with your experiences or with the amount of time you anticipate this activity taking? If you currently maintain a medical database for responders at your ESO, how did you go about developing that database? Did you use off-the-shelf technology? Do or would you need legal counsel to address issues related to privacy or confidentiality of medical information to establish such a database?

OSHA believes that it may not be necessary for EMS providers and technical rescuers to receive the same periodic exam elements as firefighters. OSHA welcomes comment on whether all the outlined tests and screenings are appropriate. Do you believe that any of these tests or screenings are unnecessary? Are there additional tests that OSHA has not included that you believe should be included?

How frequently does your ESO assess fitness for duty? The draft standard includes a requirement that responders be medically evaluated initially as a baseline for surveillance and annually thereafter. If an emergency responder did not meet fitness for duty requirements, what types of actions would you currently consider (e.g., termination, provide time to recuperate, provide or require medical treatment, assign light duty, medically retire)? Do you think the fitness-for-duty provision is necessary? Are annual evaluations common practice for your ESO? Do you think these provisions are feasible for your organization? Why or why not?

What procedures do you have in place for physical performance rehabilitation? OSHA estimated that developing a physical performance rehabilitation program for responders who are unable to meet the physical performance requirements would take between 8 and 24 hours of a fire chief's time depending on the size of the ESO. Do you agree with this estimate? If not, how long do you think this activity will take? Are there other costs besides the fire chief's time that OSHA has not considered with regards to physical performance rehabilitation?

The draft standard includes a requirement that responders be medically evaluated following an occupational exposure, illness, injury, or protracted absence from the job. Is this common practice for your ESO? Do you think this provision is necessary? Do you think it is feasible for your organization? Why or why not?

How important is it for ambulance ESOs to have health and fitness plans?

Do you currently have minimum fitness requirements? Are there any consequences if a responder does not meet these requirements -- can they still participate in training and/or response efforts?

Do you currently have a health and fitness program or similar activities? For example, do you offer exercise equipment, exercise training, and/or health counseling? OSHA estimates that participation in health and wellness programs including exercise can be done during otherwise nonproductive downtime. Do you agree with this assessment? Why or why not? OSHA estimated the time to implement a health and wellness program would be between 8 and 24 hours of a fire chief's time annually. Do you agree with this estimate? Are there other costs related to health and wellness programs that you anticipate you would incur if OSHA enacted this draft standard? Please explain.

Do you have a behavioral health and wellness program for all employees? Why or why not? How important do you think such requirements are? The draft standard currently requires that ESOs provide access to programs that provide access or referral to basic counseling. At this time, OSHA does not intend to require ESOs to bear the costs for responders to attend counseling. Do you agree with this approach? Why or why not? OSHA has estimated that a fire chief will spend two hours annually on developing and implementing the behavioral health and wellness program. Do you agree with this estimate? Why or why not? Are there additional costs, such as costs associated with contracting with an outside behavioral health and wellness provider, that you would anticipate that OSHA has not considered?

The draft standard includes a requirement that ESOs maintain a permanent health database for analysis of factors pertaining to the overall group of responders and a confidential file for each responder. Do you currently keep records on the health and fitness of responders? Do you foresee any difficulties with meeting this draft requirement? Are you using or aware of off the shelf-technology or would you need to hire expert help to develop this database (systems engineers, privacy lawyers, etc.)? Would your ESO find the permanent health database useful or beneficial? How would you use such a database? Should OSHA require ESOs to maintain a permanent health database?

Are there alternatives SERs favor over the draft standard or alternatives that OSHA has not considered that you believe should be considered? If so, please describe them.

Responder Training and Qualifications

This provision of the draft standard would require the ESO to establish the minimum level of knowledge and skills required for each responder to participate in emergency operations, based on – and differing by – the type, level and tier of service(s) performed by the ESO.

This provision would also require the ESO to provide initial training, ongoing training, refresher training, education, and professional development for each responder commensurate with the performance of expected duties and functions assigned to them. The ESO would establish the professional qualifications for responders commensurate with the performance of expected duties and functions of the ESO, and ensure responders maintain proficiency in the skills and knowledge commensurate with the performance of their duties and functions by providing periodic skills checks and monitoring training progress. The NFPA has established professional qualifications standards for a broad spectrum of emergency responders. The ESO could choose to follow the NFPA qualifications or develop comparable standards.

OSHA estimates that this is the second most expensive provision of the draft standard with total costs of \$177 million per year. However, it is not necessarily the most costly provision for a given ESO. OSHA preliminarily estimates that nearly all ESOs currently provide the necessary training or require adequate professional qualification. The cost of meeting these requirements in their entirety if an ESO is not currently providing any training or certification is high but OSHA has preliminarily determined that very few ESOs are currently providing *no* training or certification. In these cases, the cost to ESOs would only be a fraction of the training cost to address any deficiencies rather than the cost of training a completely untrained responder. OSHA has included estimates of compliance adjusted per-entity costs for model ESOs of various sizes in Appendix B for reference.

Alternative Addressing Training - ESOs:

PIRFA Alternative 8: Reduce training requirements

This alternative would scale back the initial training requirements to the basic NFPA volunteer firefighting training of 110 hours, as opposed to the estimated 355 hours in the main cost analysis of the draft standard. This alternative would mean that less time is spent in training and thereby lower the cost to the ESO to train responders. Firefighter compensation for 110 hours spent in training would be about \$4,000, about \$8,000 less per responder than the approximately \$12,000 for 355 hours of training using a loaded wage rate of \$35.05 as estimated in the PIRFA.

Alternative Addressing Professional Qualifications - ESOs:

PIRFA Alternative 9: Remove requirements that responders have certain professional qualifications

This alternative would completely remove the requirement to ensure that employees meet professional qualifications. This cost would vary widely per ESO, depending on the technical demands of the ESO.

ISSUES

How are responders at your ESO trained currently? Is it important for responders to receive training and/or professional qualifications? Why or why not? Are there types of ESOs that may not need to meet these requirements? Please describe. If you have training requirements, how are those structured? Do you require a minimum number of hours of training per responder?

OSHA's analysis of costs assumes that smaller ESOs have lower levels of training (i.e., the baseline compliance for small ESOs is lower than for larger ESOs). Do you agree with this assumption? Why or why not?

OSHA's analysis also assumes that smaller ESOs would have lower training requirements or needs – that smaller ESOs would, in general, be less likely to encounter highly complex emergency situations or would be more likely to call for specialized responders from out of the area. Do you agree with this assumption? Why or why not?

Do you currently establish professional qualification standards for different roles (e.g., firefighter, emergency medical service providers) or follow current NFPA 1001 professional qualifications standards?

Facility, Equipment, and Vehicle Preparedness

Facility Preparedness

This draft provision addresses safety and health concerns at the ESO's own facility. The provision contains requirements related to facility sleeping and living areas and other safety requirements, such as the prohibition of slide poles in newly constructed ESO facilities.

Equipment Preparedness (including PPE)

This draft provision would require that newly purchased or newly acquired tools and equipment meet the design and manufacturing requirements of a nationally recognized consensus standard or applicable OSHA standard. Additionally, ESOs would be required to inspect, maintain, functionally test and service test equipment at least annually; in accordance with manufacturer's instructions and industry practices; and as necessary to ensure equipment is in safe working order. Any tools or equipment found to be defective or in an unserviceable condition would be required to be immediately removed from service.

Existing PPE, including respiratory protection equipment, would need to comply with the edition of the respective national consensus standard that was current when the equipment was manufactured. New equipment would need to meet the current edition of the respective national consensus standard. ESOs would need to provide for cleaning, care, and maintenance of PPE and respiratory protection equipment, in accordance with the manufacturers' specifications, and remove from service any damaged or defective ensembles, elements, or equipment.

OSHA estimates that the Equipment Preparedness (including PPE) provision and the Facility Preparedness provision would cost a total of \$81 million per year. OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B for reference.

Alternatives Addressing Equipment - ESOs:

PIRFA Alternative 10: Remove requirements that equipment meet specified design and manufacturing requirements.

OSHA is assuming that removing this requirement would reduce the unit cost of equipment preparedness to 90 percent of the unit costs under the draft standard. This is estimated to save between \$597 and \$1,790 annually per average firefighting ESO.

PIRFA Alternative 11: Remove the requirement for PPE to be compliant with consensus standards.

This alternative is assumed to reduce the unit cost of PPE provision to 90 percent of the unit costs under the draft standard. OSHA estimates that this would save approximately \$6 to \$12 per responder annually. It should be noted that, under this alternative, the PPE would still need to conform to any applicable OSHA standard.

Vehicle Preparedness and Operation

This draft provision would require that ESOs establish and implement standard operating procedures (SOP) to inspect, maintain, and repair, or remove from service each vehicle that responders use. The ESO would also be required to ensure each vehicle is driven/operated by a responder who has completed a training program on operating the vehicle, and develop and implement SOPs for safely driving vehicles during both non-emergency travel and emergency response.

OSHA estimates that this provision would cost \$24 million per year. OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B for reference.

ISSUES

Does your ESO currently follow the provisions on facility preparedness and equipment and PPE preparedness? Do you consider it important? Are there any requirements currently included that you believe are not necessary? Please explain your answers.

Do you anticipate any difficulty in complying with the draft requirement that PPE meet the requirements of the corresponding standard that was current when the PPE was manufactured? Do you expect that your ESO would need to purchase new or additional PPE to meet the

requirements of this potential standard? If so, what type(s) of PPE would you need and how many items would you need? Should OSHA grandfather existing PPE into the standard? Do you agree with this approach? Why or why not?

Should OSHA remove requirements for specified design and manufacturing standards or that PPE be compliant with consensus standards? Why or why not?

Pre-Incident Planning and Procedure Development

Pre-Incident Planning

This provision of the draft standard would require ESOs to develop Pre-Incident Plans (PIPs) for significant structures, facilities, locations, and infrastructure, with development prioritized based on the life safety hazards to responders and facility occupants. PIPs would include actions to be taken if the scope of the incident is beyond the capabilities of the ESO.

OSHA estimates that this requirement would cost \$5.4 million per year. Per-entity costs for model ESOs of various sizes are presented in Appendix B for reference.

Standard Operating Procedures for Emergency Incidents

Under this draft provision, ESOs would be required to develop and implement SOPs: for operating at emergency events that the ESO foreseeably expects to encounter, based on the community or facility vulnerability and risk assessment; that describe the actions to be taken in situations involving special hazards in the ESO's workplace; and that address how responders are to operate at incidents that are beyond the capability of the ESO.

OSHA estimates that this provision would cost \$5.6 million per year. See Appendix B for per-entity costs for model ESOs of various sizes.

Incident Management System Development

The ESO would be required to adopt or develop in writing and implement an incident management system (IMS), compatible with the National Incident Management System (NIMS) and the National Response Framework (NRF), to manage all emergency incidents based on the type and level of service(s) the ESO has established and the pre-incident plans developed.

The IMS would provide structure and coordination to the management of emergency incident operations to provide for the safety and health of responders involved and designate an IC who is responsible for front-line management of the incident, tactical planning and execution, and other needs necessary for mitigation of the incident.

OSHA estimates that this provision would cost \$1.5 million per year. OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B for reference.

ISSUES

Does your ESO currently perform these types of planning exercises and program development? Do you consider them important? Are they necessary for all ESOs? Do you recommend that OSHA consider not including all or some part of any of these provisions? Please explain your answers.

Emergency Incident Operations

This provision would require ESOs to ensure: the IMS is utilized at every emergency incident; one individual responder is assigned as the IC to coordinate and direct all activities and establish a command post; the safety officer function of overseeing incident scene safety is addressed by the IC, or an Incident Safety Officer (ISO) is assigned and designated; the IC conducts a comprehensive and ongoing size-up of the incident scene, conducts a risk-benefit analysis based on the size-up, and utilizes the information in the Pre-Incident Plan to draft an Incident Action Plan; and the IC implements a personnel accountability system to account for all responders at the incident scene.

To ensure operations at an incident scene are conducted in a safe manner, the ESO would be required to: identify minimum staffing requirements to ensure incidents are mitigated safely and effectively; ensure operations are limited to those that can be safely performed by the responders available on the scene; ensure at least four responders are assembled before operations are initiated in an Immediately Dangerous to Life or Health (IDLH) atmosphere; and ensure at least two responders enter the IDLH to operate as a team and at least two responders are present outside the IDLH to provide assistance to, or rescue of, the entry team.

To further ensure responder safety on incident scenes, the ESO would be required to implement the following in accordance with the SOPs established above: a responder accountability system; a Rapid Intervention Team; medical and rehabilitation procedures; and scene safety (traffic) procedures.

At some incidents, there may be a need for assistance from employers that are typically considered to be outside the emergency response community but who may be called upon to assist an ESO by providing a service, equipment, or worker. For instance, an ESO may need to remove a heavy object, requiring the use of a crane or other heavy duty equipment, available through an SSE. To ensure SSWs are prepared to operate safely on an emergency incident in

support of the ESO, the ESO would need to ensure: an initial briefing is provided to each SSW, which includes instruction in the use of appropriate PPE, what hazards are involved, what safety precautions are to be taken, and what duties are to be performed by the SSW; an effective means of communication between the IC and the SSW; and other appropriate on-scene safety and health precautions provided to ESO responders that are used to ensure the safety and health of the SSW.

OSHA estimates that this provision would cost \$1.0 million per year. See Appendix B for per-entity costs for model ESOs of various sizes.

ISSUES

Does your ESO currently follow the emergency incident operations provisions? Do you consider it important? Is it more or less important for different situations (emergencies might vary in type or in size and scale)? Is it necessary for all ESOs? Please explain your answers.

The NIMS recognizes that overall incident management for most emergency incidents is the responsibility of a single IC. Additionally, NIMS says in some instances, the size and complexity of an incident may require an alternative manner of incident management; utilizing a unified command structure. The draft standard requires the establishment of one responder as the IC, and also requires that the ESO ensure that a unified command structure is utilized on incidents where the complexity requires a shared responsibility among two or more ESOs or agencies.

Does your ESO currently utilize or have plans on how to utilize a unified command structure where responsibility is shared between two or more ESOs? How does your ESO currently deal with complex incidents where two or more ESOs are responding to the scene?

The jurisdictions and organizations involved in managing incidents vary in their authorities, management structures, communication capabilities and protocols, and many other factors. The Panel would like your thoughts on the feasibility of the unified command and single incident commander provisions.

Post-Incident Analysis (PIA)

This provision would require ESOs to conduct a PIA following events such as a large-scale incident, a near miss incident, and a responder or SSW fatality, injury or illness that requires off-scene treatment. Based on the lessons learned as a result of the PIA, the ESO would identify and implement recommended changes to the Pre-Incident Plan, Incident Action Plans, and/or SOPs.

OSHA estimates that this provision would cost \$21.8 million per year. OSHA has included estimates of per-entity costs for model ESOs of various sizes in Appendix B for reference.

ISSUES

Does your ESO conduct any type of PIA? If so, please describe. Do you consider it important? Is it necessary for all ESOs?

Program Evaluation

This provision would require the ESO to evaluate the adequacy and effectiveness of the Emergency Response program at least annually, and implement changes as necessary.

OSHA estimates this will take between 20 and 60 hours of a fire chief's time annually depending on the size of the ESO for a total of about \$49.6 million annually for all affected ESOs.

The following paragraphs apply to employers that are, by definition, Skilled Support Employers.

OSHA recognizes the importance of protecting SSWs when they are providing assistance or a service at an emergency incident scene under the control of an ESO. Not every employer will be an SSE; in fact, most will not be. Also, not every employee of an SSE will be an SSW. The SSE would need to determine which of their workers, based on the workers' knowledge, skills and abilities, could be sent to provide skilled support assistance at an emergency incident scene. The SSE would designate each of those workers to be an SSW.

Skilled Support - Employer General Requirements

The SSE would be required to establish the type and level of emergency service(s) it expects to perform. Only workers who are properly trained, qualified, and fit, based on the requirements herein, would be designated to perform as SSWs at an emergency incident.

The SSE would be required to establish the minimum fitness for duty requirements for SSWs, based on the type and level of service being provided, and to medically screen each SSW and have the screening evaluated by a qualified health care professional annually. The screening would verify that the SSW: is physically able to safely perform required activities without requiring direct assistance of another individual; is not significantly limited in musculoskeletal mobility or exercise tolerance, regardless of assignment given; does not have any medical condition (physical or psychological) that prevents them from performing the essential job functions or prohibits the wearing of appropriate PPE; and is capable of receiving essential and requisite immunizations, prophylaxis, treatments, pharmaceuticals, and other interventions that are necessary to safeguard health and allow assigned duties to be successfully completed.

The draft standard would require that SSEs have and implement a fatigue management plan that includes at least the following: a fatigue risk management policy that identifies the roles and responsibilities of personnel under the plan; an education and awareness training program that includes the identification of fatigue risk factors associated with the emergency operations being performed, and recognition of the effects of fatigue; implementation of control/mitigation strategies that manage SSW fatigue, such as work/rest strategies with shift lengths and rotations, and time off periods; and assessment of the effectiveness of the controls in mitigating SSW fatigue that include evaluations and monitoring to enable quick course corrections.

Skilled Support – Personal Protective Equipment

This provision would require that the SSE conduct a PPE assessment to determine what is needed to protect SSWs, based on the type and level of service being provided. PPE would need to meet the requirements of the corresponding OSHA standard. The SSE would be required to ensure that SSWs properly use or wear PPE. The SSE would also be required to provide for cleaning, care and maintenance of PPE. The SSE would provide PPE at no cost to the SSWs.

Skilled Support – Training

This provision of the draft standard would require the SSE to provide pre-incident training covering the following topics: disaster/emergency site safety and health hazard recognition; care and proper use of PPE and procedures to safely work on a disaster site, including limitations of respirators; decontamination procedures; and basic principles of the incident command system.

The pre-incident training would be a minimum of seven and a half (7.5) hours, similar to the OSHA Outreach Disaster Site Worker programs. The requirement to provide this training would not be waived because of the emergency nature of an incident.

Skilled Support – Worker Participation

This provision of the draft standard would require the SSE to: consult with SSWs in developing and updating the Emergency Response program and involve SSWs in implementing and evaluating the program and in the review and change process. It would also require the SSE to: request input from SSWs regarding workplace modifications; involve SSWs in SSE facility inspections and incident investigations; encourage SSWs to report safety and health concerns, such as hazards, injuries, illnesses, near misses, and deficiencies in the program; respond to such reports in a reasonable period of time; and post procedures for reporting safety and health concerns in a conspicuous location.

Under the draft standard SSEs would be prohibited from retaliating or discriminating against SSWs for reporting safety and health concerns, and prohibited from engaging in practices or

implementing policies that deter SSWs from participating in the program. OSHA anticipates that a worker participation program would be considerably less complex and take less time than for ESO and would not be ongoing. Do you agree?

Skilled Support – Program Evaluation

This provision would require the SSE to evaluate the adequacy and effectiveness of the Emergency Response program at least annually, and implement changes as necessary.

OSHA estimates that program evaluation will take SSEs 30 minutes of a skilled support supervisor's time annually.

Alternatives Addressing SSEs:

PIRFA Alternative 13: Exclude all or some types of SSEs from the scope of the standard.

The SSE provisions have the potential to have significant impact on a broad number of employers in a wide range of industries. An alternative would be to exclude all SSEs from a potential standard, or limit the scope to only certain types of SSEs who may be called to provide assistance at an individual emergency incident; versus all who may operate at a disaster site. Due in part to uncertainties of the potential reach of such provisions as well as the manner in which injury and illness data is recorded, OSHA has found it challenging to quantify the number of injuries, illnesses, and fatalities among workers providing skilled support services at emergency incident scenes. Therefore, the benefits of the SSE provisions are undetermined at this time. The cost per establishment is estimated to vary by size, but even for the smallest establishments, compliance with the draft standard is estimated to take at least 8 hours of employers' time, plus additional cost for each SSW.

PIRFA Alternative 14: Delete or reduce the requirement for annual fitness for duty medical screenings for SSWs.

The draft provision requires annual fitness for duty medical screenings for each employee designated as an SSW to evaluate the worker's physical fitness to perform the assigned duties. These screenings are estimated to cost \$51.31 per SSW for the initial unit cost of the medical screening part of the fitness for duty screening and \$25.66 annually thereafter. These screenings are estimated to take an hour of a worker's time. OSHA is considering alternatives that would remove the requirement for fitness for duty assessments for SSWs (Alternative 14(a)) or that would reduce the frequency of screening SSWs for fitness for duty from annually to every two (Alternative 14(b)(1)) or three (Alternative 14(b)(2)) years.

PIRFA Alternative 15: Delete or reduce the requirement for pre-incident training for SSWs.

The draft standard requires that SSWs receive at least 7.5 hours of training for working at emergency incident scenes. OSHA estimates the unit cost per SSW would be about \$280 per SSW for 8 hours of training (7.5 hours as required by the provision plus 0.5 hours of pre-incident training). OSHA is considering removing the training requirement in its entirety (Alternative 15(a)) or reducing the amount of training required per SSW (Alternative 15(b)) from a specified 7.5 hours to a performance based requirement where the SSE would determine the appropriate training duration for their workers and the type of skilled support work they perform.

PIRFA Alternative 16: Delete or reduce the requirements for worker participation for SSWs.

The draft standard requires that SSWs participate in the development of the SSE's Emergency Response program including (among other things) consulting in the development and updating of the plan, providing input regarding workplace modifications, participating in SSE facility inspections and incident investigations, and being encouraged to report safety and health concerns. This alternative would remove or reduce these requirements. OSHA has preliminarily estimated that this provision would be a one-time cost of between one and three hours depending on the size of the SSE.

PIRFA Alternative 17 : Create a new subsection for disaster site workers and move applicable SSE requirements into it.

Many of the draft SSE provisions are more applicable to operating at a disaster site, such as a tornado, rather than directly assisting an ESO at an individual emergency incident scene, such as an overturned truck trapping victims in a car. This alternative considers whether to maintain the provisions as drafted; reduce the requirements to the minimum needed for SSWs operating at individual incident scenes (similar to HAZWOPR); or reorganizing the current draft provisions to maintain those most applicable to assisting ESOs in individual incidents, and create a new subsection for the provisions more applicable to disaster sites.

ISSUES

Do you think it is important to include SSEs in the scope of the draft standard? Do you think the draft standard addresses the hazards faced by SSEs in a reasonable manner? Why or why not?

Should OSHA reduce the provisions for SSEs to only the minimum needed for assisting ESOs at individual incidents? Should OSHA reorganize the SSE provisions to move some of them into a new subsection for disaster site employers/workers?

Are there additional requirements OSHA should include for SSEs and SSWs? Are there provisions that you think are unnecessary for SSEs and SSWs to follow?

Given that SSEs are required to comply with existing general industry, construction, or maritime requirements on disaster sites, is it necessary for OSHA to add additional requirements for SSEs in this standard? If so, which requirements?

How do SSEs/SSWs and ESOs coordinate at emergency scenes to ensure the safety of the SSWs?

What PPE do SSWs use at emergency sites? Do SSWs need specialized PPE when providing skilled support services at an emergency site? If so, who typically provides that PPE for the SSWs? Is it provided by the SSE or the ESO?

The draft standard currently states that the pre-incident training requirement would not be waived because of the emergency nature of an incident. Do you believe this is the correct approach? Is it possible that this would inhibit emergency response support by SSEs? OSHA welcomes suggestions on how to assure that SSWs receive the proper training to keep them safe while still allowing ESOs to access the support services they need in emergency situations.

Do you establish minimum fitness for duty requirements for SSWs? Do you screen SSWs for medical conditions (psychological or psychological) that would prevent the SSW from performing essential job functions? If so, how often? Would you be able to do so annually?

Do you require an assessment of whether SSWs are capable of receiving essential and requisite immunizations, prophylaxis, treatments, pharmaceuticals, and other interventions that are necessary to safeguard health and allow assigned duties to be successfully completed?

Considering the frequency with which you respond to emergency situations, do you believe that the draft fitness for duty or medical screening and assessment requirements are necessary? Would they improve your ability to respond to emergencies?

Does your SSE currently maintain fatigue management plans in emergency situations? If so, how are those plans implemented? What and how much are the costs associated with these plans, for example in terms of nonproductive time, support equipment, rest/cooling facilities, etc. Is it more or less important for different situations (emergencies might vary in type or in size and scale)? Please explain your answers.

The draft standard would require skilled support worker participation. Do you currently maintain an Emergency Response program? If so, do you currently consult with and involve SSWs in development of Emergency Response programs? Do you think all of the draft requirements, such as involving SSWs in SSE facility inspections, are related to or an essential part of an Emergency Response safety program? Do you recommend that OSHA adopt some or all of these requirements?

Do you recommend that OSHA adopt any of these alternatives addressing SSEs and SSWs? Please explain your reasoning. Are there alternatives that OSHA has not considered that you believe the agency should consider?

Are you aware of workplace injuries or fatalities involving SSEs/SSWs? OSHA would welcome any information you have on the subject.

4. Cost of Compliance: Unit Costs and Baseline Non Compliance

In order to estimate the potential impact of an Emergency Response standard, OSHA developed estimates of the amount of time needed to comply with each provision (referred to as “labor hours”). The full development of these costs is provided in the PIRFA. Two of the most important factors affecting costs are OSHA’s estimate of labor hours required, and of the baseline compliance rate. The baseline compliance rate represents the percentage of employers, by size class, that already do what OSHA’s rule would require, and Appendix B provides a summary of these results.

ISSUES

Do you believe OSHA has made a reasonable preliminary estimate of potential unit costs in its analysis? For example, do you believe the time estimates for fulfilling the programmatic elements of the standard are reasonably accurate? Alternatively, do you believe OSHA’s preliminary estimates of baseline compliance are reasonably accurate? Please explain your answers.

One potentially relevant element of costs is overhead, for example, costs for property or equipment. What are your overhead costs? Would any of them be substantially affected by this potential standard?

OSHA preliminarily estimated that the labor time for responders to engage in physical activity as required by the fitness program provision would add no costs because that physical activity could be done on down and waiting time. Do you agree?

5. General Regulatory Alternatives

This section describes some general regulatory alternatives OSHA is considering. OSHA presents a number of alternatives in this section but welcomes suggestions from the SERs for any additional alternatives you believe should be considered. The total cost of each potential regulatory alternative developed by OSHA thus far is summarized in the PIRFA Section VIII. Regulatory Options and Alternatives, Table VIII-2, and in Appendix D. Where applicable,

OSHA has included the unit cost savings for these alternatives to allow SERs to evaluate the potential impact of any of these changes.

Alternative Removing Certain Requirements for Certain Sized ESOs:

PIRFA Alternative 12: Remove certain groups of ESOs from the requirement to meet particular provisions of the standard.

The draft standard could be changed to combine elements of any of the alternatives. For example, OSHA could require all ESOs to comply with the draft planning provisions but could exempt some small volunteer fire departments from the fitness for duty requirements. This would save small volunteer ESOs an estimated \$68 per responder in a typical year. The agency is open to all suggestions on how to best structure an Emergency Response standard that is both protective for responders and that does not result in ESOs reducing services to their surrounding communities.

ISSUES

If you were structuring an Emergency Response standard, what provisions do you believe are absolutely necessary? What provisions, if any, do you believe could be relaxed for certain groups, types, and/or sizes of ESOs?

OSHA is very interested in the impact of an Emergency Response standard on small ESOs and welcomes any comment from the SERs on this issue.

Alternatives Addressing Level of Specification in the Draft Standard:

PIRFA Alternative 18: Increase or decrease the level of specification in the standard for various elements.

OSHA believes this potential standard should be a performance-based program standard. Many of the provisions in the draft standard set performance-based objectives for the employer to meet, leaving the employer to determine which means are best suited to meet the objectives for compliance with the provisions. However, the draft standard, as written by the NACOSH subcommittee, has varying levels of specification for provisions addressing similar requirements. The provisions for ESOs are drafted as more performance-based, while the SSE provisions are more prescriptive. In this alternative, OSHA is asking for feedback on two directions the agency could take in preparing a draft standard:

- a) The provisions for ESOs could be written to be more prescriptive, similar to the current draft provisions for SSEs; or

- b) The provisions for SSEs could be written in a more performance-based manner, similar to the current draft provisions for ESOs.

The costs or cost savings for these alternatives are difficult to quantify, but OSHA believes that ultimately many of the same elements would be required under any language. Nonetheless, there may be cost advantages to presenting the requirements for different types of affected employers in a consistent manner. Less prescriptive, more programmatic approaches to compliance allow employers greater flexibility in complying with OSHA rules. This allows employers to find innovative approaches to meeting OSHA requirements that can save the employer money while still accomplishing the goal of the requirement.

Do you prefer a more prescriptive or less prescriptive approach to an Emergency Response standard? Or should OSHA retain the language as drafted by the subcommittee? Do you believe it is easier for a small ESO or SSE to comply with a rule that is more prescriptive? Or with a rule that is more programmatic? Please explain the reasoning behind your answers.

General Questions

How might your county, city, municipal, etc., budget cycle affect your ESO's ability to implement the draft standard? Would a phase-in period be helpful to your ESO? What do you think is a reasonable phase-in time for an Emergency Response standard?

OSHA is interested in how ESOs address Spontaneous Unaffiliated Volunteers (SUV) and Good Samaritans at emergency scenes. The draft standard includes requirements for ESOs to (among other things) establish assembly and registration for SUVs, provide instruction on the use of appropriate PPE, hazards, safety precautions, and duties to be performed by the SUV. What procedures does your ESO have in place to address the safety of SUVs and Good Samaritans? Do you think it is appropriate for OSHA's Emergency Response standard to address SUVs and Good Samaritans? Why or why not? Are there situations where SUVs and/or Good Samaritans create hazards for your responders? If so, how do you keep your responders safe from these hazards?

Appendix A. Summary of Estimation of Affected Entities

Profile of Affected Fire Departments

OSHA primarily used data from the NFPA registry to estimate the number of ESOs and responders covered by the draft standard. In addition to removing some ESOs and responders that are not covered for various reasons, OSHA adjusted the number of private firefighting ESOs and responders to account for underreporting to the registry. After these adjustments, OSHA estimates that a total of 11,587 ESOs and 524,489 responders would be affected by this draft standard. Table A-1 shows the number of affected firefighters, by ESO type, in each ESO size category.

**Table A-1 - Fire Departments and Firefighters in Scope by
Department Type and Employment Size Class**

ESO Type/Size Class	ESOs	Responders
Career		
<25	1,243	22,028
25-49	1,541	51,030
50-99	577	38,532
100-249	221	32,225
250-499	51	17,876
500+	36	52,960
Total Career	3,669	214,651
Volunteer		
<25	2,667	45,513
25-49	2,296	74,846
50-99	595	37,598
100-249	172	23,432
250-499	15	4,618
500+	2	1,258
Total Volunteer	5,747	187,265
Combination		
<25	386	5,509
25-49	1,042	28,488
50-99	514	29,645
100-249	174	22,054
250-499	34	10,845
500+	21	26,033
Total Combination	2,171	122,573
Total		
<25	4,296	73,050
25-49	4,879	154,364
50-99	1,686	105,775
100-249	567	77,711
250-499	100	33,339
500+	59	80,251
Total All	11,587	524,489

Source: See PIRFA

Note: See PIRFA for full citations. Figures may not add to totals due to rounding.

In addition to the USFA registry data, OSHA examined BLS Occupational Employment Statistics data to provide more context about private sector firefighters. BLS data suggest there are approximately 16,000 firefighters employed in the private sector nationwide. BLS data likely exclude firefighters who are trained to respond to emergency situations but who are primarily employed in another occupation, but these responders would be affected by the draft rule. Therefore, OSHA has accounted for the absence of these workers in the data by increasing the number of estimated private sector firefighters. As a preliminary adjustment for this reason as well as underreporting by the fire registry, OSHA’s judgment is that the estimated number of private fire departments and affected firefighters would be approximately twice what appears in

the available data. This adjustment is also meant to include an unknown number of private sector ESOs providing wildland firefighting and firefighting support services (classified in NAICS 115310, Support Activities for Forestry), primarily to state and Federal agencies. OSHA welcomes comment and input on this aspect of the analysis.

As shown in Table A-2, the majority of private firefighters in this dataset (86 percent) are employed in NAICS 561000 Administrative and Support Services, providing firefighting services as a commercial activity. The remainder includes industrial fire brigades, fire departments at universities, and the like.

Table A-2 - Private Fire Department Employment by NAICS

NAICS	Industry	Employment in SOC 33-2011 Firefighters
488100	Support Activities for Air Transportation	290
541330	Engineering Services	60
541600	Management, Scientific, and Technical Consulting Services	100
541710	Research and Development in the Physical, Engineering, and Life Sciences	160
561000	Administrative and Support Services	13,490
562900	Remediation and Other Waste Management Services	50
611000	Educational Services	190
621000	Ambulatory Health Care Services	360
622100	General Medical and Surgical Hospitals	40
711000	Performing Arts, Spectator Sports, and Related Industries	240
31-33	Manufacturing	700
488100	Support Activities for Air Transportation	290
541330	Engineering Services	60
541600	Management, Scientific, and Technical Consulting Services	100
Total Employment in SOC 33-2011 Firefighters		15,680

Source: See PIRFA

Note: Figures may not add to totals due to rounding.

Fire Departments and Responders by Population Served

Because of the preponderance of public entities in emergency response, the population served is of particular relevance. Under the RFA, small governmental jurisdictions are defined as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.” This analysis also examines a number of other population thresholds of less than 50,000 because these are of interest for several regulatory alternatives. OSHA estimated the population served by each ESO by applying the ratio of population served per firefighter in Firehouse Magazine’s 2017 National Run Survey to the number of firefighters in the USFA registry data. The resulting distribution of ESOs by population served is shown in Table A-3.

Table A-3- Public Fire Departments by Estimated Population Served in Affected States

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total Fire Departments in Scope: Public – State Plan State						
Career	3,429	15	45	294	2,274	3,000
Volunteer	5,237	38	104	860	4,048	4,962
Comb.	2,053	1	15	93	1,017	1,719
Total	10,719	54	164	1,247	7,339	9,681

Source: See PIRFA

Note: Figures may not add to totals due to rounding.

Table A-4, below, shows the number of responders by estimated population served.

Table A-4- Publicly Employed Firefighters by Estimated Population Served in Affected States

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total in Scope: Public – State Plan State						
Active Firefighters - Career	182,918	25	166	1,349	20,004	51,891
Active Firefighters - Volunteers	236,615	13	437	10,451	102,003	164,758
Active Firefighters - Paid per Call	74,078	4	63	2,317	42,417	62,787
Total	493,611	42	666	14,117	164,424	279,436

Source: See PIRFA

Note: Figures may not add to totals due to rounding.

Emergency Medical Services

The draft standard also covers public and private ESOs that provide emergency medical services. However, detailed data for EMS providers similar to those for fire departments are not available. OSHA combined data from several sources in order to construct a profile with similar parameters as the firefighter profile.

First, statistics reported by the National Association of Emergency Medical Technicians (NAEMT) based on 2008 data suggest an estimated 15,276 ambulance services ESOs in the United States. NAEMT reported that an estimated 49 percent of EMS providers are fire departments with either cross-trained or separate EMS responders. Other “government or third party” providers represent an estimated 15 percent of the total, while private EMS providers account for 18 percent, and hospital-based services represent 7 percent of the total.

NAEMT estimates that these ambulance services employ 840,669 responders which includes first responders, emergency medical technicians (EMTs), paramedics, and registered nurses. This analysis assumes that those responders are distributed proportionately among the ambulance services of each type, which yields an estimate of 363,353 responders at in-scope ESOs, with 69,118 of those responders at public ESOs in state plan states and 294,234 responders at private ESOs.

The estimates of career, volunteer, and “combination” services and responders are shown in Table A-5, below. Detailed information can be found in the PIRFA. The agency welcomes feedback on these methods and estimates.

Table A-5 - Estimated Number of Ambulance Services and Personnel – By Type of ESO

	Private	Public, State Plan State	Total in Scope
Ambulance ESO Entities			
Career	2,032	507	2,538
Volunteer	2,139	533	2,672
Comb.	5,347	1,242	6,589
Total	5,347	1,242	6,589
Ambulance ESO Responders			
Career	111,809	27,884	139,693
Volunteer	117,694	29,352	147,046
Comb.	117,694	29,352	147,046
Total	294,234	70,791	365,025

Sources: See PIRFA

Notes: See PIRFA for full notes and citations.

Figures may not add to totals due to rounding.

Finally, OSHA has distributed ambulance ESOs and responders at those ESOs into employment size classes, which parallel the size classes used for fire departments above (fewer than 25 responders, 25 to 49 responders, etc.). OSHA based this distribution on data from the U.S. Census Bureau's 2012 Statistics of U.S. Businesses (NAICS 621910 Ambulance Services). The number of ambulance ESOs by type and employment size class are shown in Table A-6, below.

Table A-6 - Estimated Number of in Scope Ambulance ESOs by ESO Size

ESO Employment Size Class	Private	Public, State Plan State	Total in Scope
Career Responder Ambulance ESOs			
<25	1,274	318	1,591
25-49	374	93	467
50-99	189	47	236
100-249	105	26	131
250-499	33	8	41
500+	57	14	71
Total	2,032	507	2,538
Volunteer Responder Ambulance ESOs			
<25	737	122	859
25-49	216	34	251
50-99	110	21	130
100-249	61	13	73
250-499	19	4	23
500+	33	8	41
Total	1,176	202	1,378
Combination Career and Volunteer Ambulance ESOs			
<25	1,341	335	1,675
25-49	394	98	492
50-99	199	50	249
100-249	110	28	138
250-499	35	9	44

Table A-6 - Estimated Number of in Scope Ambulance ESOs by ESO Size

ESO Employment Size Class	Private	Public, State Plan State	Total in Scope
500+	60	15	75
Total	2,139	533	2,672
Total In Scope Ambulance ESOs			
<25	3,352	774	4,126
25-49	984	226	1,210
50-99	498	117	615
100-249	276	66	342
250-499	87	21	108
500+	150	37	187
Total	5,347	1,242	6,589

Sources: See PIRFA

Notes: See PIRFA for full notes and citations.

Figures may not add to totals due to rounding.

Table A-7 below, shows the estimated number of responders employed at in-scope ambulance ESOs by size class.

Table A-7 - Estimated Number of in Scope Ambulance Responders by ESO Size

ESO Employment Size Class	Private	Public, State Plan State	Total in Scope
Career Ambulance ESO Responders			
<25	14,058	3,506	17,564
25-49	14,749	3,679	18,428
50-99	15,012	3,744	18,756
100-249	17,541	4,374	21,915
250-499	10,944	2,729	13,673
500+	39,504	9,852	49,356
Total	111,809	27,884	139,693
Volunteer Ambulance ESO Responders			
<25	8,139	1,347	9,486
25-49	8,539	1,367	9,907
50-99	8,691	1,640	10,332
100-249	10,155	2,103	12,258
250-499	6,336	1,393	7,729
500+	22,871	5,704	28,575
Total	64,732	13,555	78,286
Responders in Combination ESOs			
<25	14,798	3,691	18,489
25-49	15,526	3,872	19,398
50-99	15,803	3,941	19,743
100-249	18,464	4,605	23,069
250-499	11,520	2,873	14,393
500+	41,583	10,371	51,954
Total	117,694	29,352	147,046
Total Ambulance ESO Responders			
<25	36,995	8,544	45,539
25-49	38,814	8,918	47,732
50-99	39,506	9,325	48,831

Table A-7 - Estimated Number of in Scope Ambulance Responders by ESO Size

ESO Employment Size Class	Private	Public, State Plan State	Total in Scope
100-249	46,161	11,082	57,243
250-499	28,800	6,996	35,795
500+	103,958	25,926	129,885
Total	294,234	70,791	365,025

Sources: See PIRFA

Notes: See PIRFA for full notes and citations

Figures may not add to totals due to rounding.

Similar to the approach OSHA used for fire departments, OSHA estimated the number of public ambulance ESOs serving small governmental jurisdictions (those serving fewer than 50,000 people) as well as a number of other population thresholds of less than 50,000, because these are of interest for several regulatory alternatives.

As noted previously, no detailed data exist on the size of the jurisdiction served by ambulance ESOs. OSHA applied the same ratios used for calculating firefighting ESOs of different sizes to the total number of ambulance ESOs. This assumes that the distribution across size classes are the same for both firefighting and ambulance ESOs. Table A-8, below, shows the resulting distribution of ambulance ESOs by estimated population served.

Table A-8 - Public Ambulance ESOs by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total in Scope Public Ambulance ESOs in State Plan States						
Career	507	1	3	32	145	180
Volunteer	202	0	1	7	34	42
Comb.	533	1	4	35	161	200
Total	1,242	2	8	74	339	422

Sources: See PIRFA

Note: Figures may not add to totals due to rounding.

Table A-9 shows the estimated number of affected ambulance responders employed by public ambulance ESOs by population served.

Table A-9 - Public Ambulance Responders by Estimated Population Served

	Total for all Populations	Pop. ≤ 2,500	Pop. ≤ 5,000	Pop. ≤ 10,000	Pop. ≤ 25,000	Pop. ≤ 50,000
Total in Scope Public Ambulance Responders in State Plan States						
Career	27,884	141	475	4,576	21,016	26,124
Volunteer	13,555	68	231	2,224	10,216	12,699
Comb.	29,352	148	148	148	148	148
Total	70,791	358	854	6,948	31,380	38,971

Sources: See PIRFA

Note: Figures may not add to totals due to rounding.

Skilled Support Employers

Under OSHA’s draft Emergency Response standard, a Skilled Support Employer is defined as an entity whose primary function is something other than providing an emergency service, but who designates one or more employees to provide a service at the scene of an emergency incident.

Examples include employers that provide cranes, heavy duty wrecker/rotator tow vehicles, construction equipment, or utility and public health services. While detailed data are available regarding the establishments and employees in industries that might provide these services in general, no information is currently available to characterize or profile the numbers of entities or employees that have arrangements with Emergency Service Organizations to provide such services on an ongoing basis.

Appendix B. Unit Costs and Baseline Compliance

Table B-1 shows unit cost estimates for fire departments by employment size class. Table B-5 shows corresponding cost estimates for ambulance ESOs and Table B-9 shows unit cost estimates for SSEs. For ESOs, OSHA first estimated the amount of time needed to comply or the cost in dollars to comply for establishments in the 250-499 employee size class, based upon the experience of fire departments or ambulance ESOs in that size class, and then extrapolated it to the other size classes. Tables B-1, B-5, and B-9 also show whether a unit cost is applied per ESO or entity or per responder or SSW, the type of worker expected to undertake a given activity, and whether an activity is estimated to take place only for newly hired responders or SSWs or annually for all responders or SSWs. The sources used for these estimates, additional calculations, and additional data are available in the PIRFA. The agency requests feedback from SBREFA participants on all aspects of these cost estimates. Are these estimates in line with what these elements would cost or how long these elements would take based on your experience?

Costs for Firefighting ESOs

Program development and planning

OSHA estimated costs for a number of program development activities as shown in Table B-1. The agency estimates that developing the community and facility vulnerability risk assessment and the Emergency Response program would be the most burdensome in terms of hours. Those activities are estimated to take 40 to 120 hours and 20 to 40 hours, respectively, depending on the size of the ESO. Those and other planning and program development times are detailed in Table B-1 below. OSHA welcomes feedback on whether these time estimates seem reasonable. Are these estimates in line with the amount of time spent on these activities at your ESO?

Fitness for Duty

Table B-1 shows that the estimated costs of this draft standard include a per-employee cost to comply with the draft requirement for evaluating fitness for duty. OSHA estimates that this would take, on average, two hours per responder (for all ESO sizes). This time estimate includes a one-hour fitness assessment, with one responder being assessed and another performing the assessment. The agency acknowledges that multiple responders may be evaluated at the same time which would lower the per-responder cost of this provision. OSHA requests information on

how fitness for duty is currently established. How long does it take? What type of evaluations are performed? How many responders are evaluated at one time? How frequently are assessments done?

The draft standard would provide a framework for facilitating responders to maintain sufficient fitness levels for their responsibilities, including, for example, providing for exercise training. However, the agency believes that the standard would not require an increase in compensation of responders by ESOs – that this activity could be undertaken while the responder is on duty and required to be at the firehouse but not engaging in emergency response activities. Based on preliminary research, OSHA found that fitness exercises are routine among firefighters during downtime (research indicates that between 80 and 95 percent of firefighters engage in exercise as least “some days” while at the fire station). Do responders at your ESO routinely engage in exercise during downtime at the fire station?

Training and Qualifications

Table B-1 also shows per-employee training and qualification costs. The hours necessary to complete state-required training can vary significantly by state and by type of firefighter (career, volunteer, or paid per call). To broadly capture new-hire responder training, OSHA averaged the time needed to complete a 110-hour NFPA-approved volunteer firefighter course and the 600 hours a responder would spend training at a State Fire Academy in order to derive the average number of training hours. Using this method, OSHA estimates that, in the base-case, a “typical” firefighter would complete 355 hours of responder training upon hire. This estimate was scaled for the remaining fire department size classes based on an initial assumption that shorter training courses would be adequate for smaller departments while large departments would need to utilize more extensive training courses for their responders. This in turn reflects the assumption that larger departments would be more likely to encounter more complex firefighting situations. OSHA welcomes feedback on these estimates and assumptions. What training is provided to responders in your ESO? How long does that training take? Is the cost of a training course paid for by your ESO? If so, how much do those courses cost? How frequently is refresher training provided?

Medical Surveillance

OSHA also examined the unit costs for establishing and providing regular medical surveillance for emergency responders. The unit costs for medical surveillance are drawn from the Centers for Medicare and Medicaid’s (CMS) Physician’s Fee Schedule for 2018, CMS’ Clinical Laboratory Fee Schedule, the Centers for Disease Control and Prevention Adult Vaccine Price List, Joshi’s estimate of the cost of Hepatitis C screening, and Healthcare Administrative Providers’ estimate of the cost of a CT scan to screen for lung cancer. The type and frequency of exams were based on the 2018 NFPA 1582 standard’s recommendations for occupational medical programs. In estimating the cost of providing medical screening and surveillance, OSHA took into account that certain tests are only needed or recommended for certain subsets of

responders (e.g., only responders over 50 would need a colonoscopy). Given these considerations, the agency estimates the average unit cost of medical surveillance per responder would be approximately \$250. The full list of tests OSHA included in this cost analysis and the corresponding costs of those tests are presented in an appendix to this document for your reference.

What type of medical surveillance is provided at your ESO? If it is currently provided, how do your responders receive that surveillance? For example, do you have an on-site medical provider? Are responders sent to their primary care physician? Does your ESO pay for your responders to receive the full complement of NFPA recommended tests and screenings? Are there certain tests that you believe are more impactful in improving responder health than others? Are there tests that you believe are not necessary for firefighters?

Baseline compliance

Table B-2 shows the estimated baseline current compliance rate for each provision of the draft standard, by entity size, for fire departments. These represent the percentage of ESOs that OSHA estimates are currently doing what would be required by a given draft provision. Do these estimates reflect your experiences working in the industry? Are there areas where you believe OSHA has significantly over- or under-estimated compliance?

Table B-1 - Labor Hours by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Responder Program (ER)									
Develop ER Program	20	24	24	30	40	60	ESO	Fire Chief	One-time
Update and Revise ER Program	4	5	5	6	8	12	ESO	Fire Chief	Annual
Responder Participation-Meetings	8	10	10	12	16	24	ESO	Firefighter	Annual
Responder Participation-Post Sign	0.05	0.05	0.05	0.05	0.05	0.05	ESO	Fire Chief	Annual
Establishment of Service(s) Capability									
Establishment of Service(s) Capability	12	14	14	18	24	36	ESO	Fire Chief	One-time
Develop Mutual Aid Agreements with other ESOs	1	1	1	1	1	2	ESO	Fire Chief	One-time
Community or Facility Vulnerability and Risk Assessment	40	48	48	60	80	120	ESO	Fire Chief	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	12	14	14	18	24	36	ESO	Fire Chief	One-time
Update Written RMP	5	6	6	8	10	15	ESO	Fire Chief	Annual
Responder Medical/Fitness Requirements									
Minimum Medical Requirement - Statement	8	10	10	12	16	24	ESO	Fire Chief	One-time
Confidential Health Database	0.08	0.08	0.08	0.08	0.08	0.08	Responder	Fire Chief	One-time
Physical Performance Requirement - Statement	8	10	10	12	16	24	ESO	Fire Chief	One-time
Develop Physical Performance Rehabilitation Program	8	10	10	12	16	24	ESO	Fire Chief	One-time
Establish Health and Fitness Program -Written Plan	8	10	10	12	16	24	ESO	Fire Chief	One-time
Implement Health and Fitness Program	8	10	10	12	16	24	ESO	Fire Chief	Annual
Medical Surveillance - Initial	2.5	2.5	2.5	2.5	2.5	2.5	Responder	Firefighter	One-time
Medical Surveillance - Periodic	2.5	2.5	2.5	2.5	2.5	2.5	Responder	Firefighter	Varies
Fitness for Duty	2	2	2	2	2	2	Responder	Firefighter	Varies
Behavioral Health & Wellness Program	2	2	2	2	2	2	ESO	Fire Chief	Annual
Responder Training and Qualifications									
Document Responder Training	8	10	10	12	16	24	ESO	Fire Chief	One-time
Initial New Responder Training	178	213	213	266	355	533	Responder	Firefighter	Annual
Ongoing Responder Training	6	7	7	9	12	18	Responder	Firefighter	Annual
Refresher Responder Training	2	2	2	2	3	5	Responder	Firefighter	Annual
Professional Development	20	24	24	30	40	60	Responder	Firefighter	Annual
Document Professional Qualifications	20	24	24	30	40	60	ESO	Fire Chief	Annual
Facility & Equipment Preparedness									
Facility Preparedness	40	48	48	60	80	120	ESO	Fire Chief	Annual

Table B-1 - Labor Hours by Employment Size Class - Fire Departments and Firefighters

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Equipment Preparedness	40	48	48	60	80	120	ESO	Fire Chief	Annual
Inspect, Maintain, and Test Equipment	40	48	48	40	80	120	ESO	Firefighter	Annual
PPE Hazard Assessment	8	10	10	12	16	24	ESO	Fire Chief	One-time
PPE Provision	8	10	10	12	16	24	ESO	Fire Chief	One-time
PPE Maintenance	40	48	48	60	80	120	ESO	Firefighter	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	8	10	10	12	16	24	ESO	Fire Chief	One-time
Vehicle Inspection and Maintenance	40	48	48	60	80	120	ESO	Fire Chief	Annual
Pre-Incident Planning									
Pre-Incident Planning	20	24	24	30	40	60	ESO	Fire Chief	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	20	24	24	30	40	60	ESO	Fire Chief	One-time
Incident Management System Development									
Incident Management System Development	20	24	24	30	40	60	ESO	Fire Chief	One-time
Emergency Incident Operations									
Emergency Incident Operations	20	24	24	30	40	60	ESO	Fire Chief	One-time
Communicate Commander/Location of Command Post	0.08	0.08	0.08	0.08	0.08	0.08	ESO	Fire Chief	One-time
Changes to Incident Perimeter	0.25	0.25	0.25	0.25	0.25	0.25	ESO	Fire Chief	One-time
Post Incident Analysis									
Post Incident Analysis	8	10	10	12	16	24	ESO	Fire Chief	Annual
ID/Implement Changes to Pre-Incident Plan	1	1	1	1	1	2	ESO	Fire Chief	Annual
ER Program Evaluation									
ER Program Evaluation	20	24	24	30	40	60	ESO	Fire Chief	Annual
ID and Implement Changes to ER Program	0.50	0.50	0.50	0.50	0.50	1.00	ESO	Fire Chief	Annual

Source: see PIRFA.

Table B-2 - Baseline Compliance Rate by Provision and Size of Fire Department

Provision	ESO Size by Number of Firefighters					
	<25	25-49	50-99	100-249	250-499	500+
Emergency Response Program	81%	82%	85%	87%	90%	92%
Establishment of Service(s) Capability	7%	12%	25%	37%	50%	62%
Organization Risk Management Plan	7%	12%	25%	37%	50%	62%
Medical/Fitness Requirements	7%	12%	25%	37%	50%	62%
Training	91%	91%	92%	94%	95%	96%
Facility Preparedness & PPE	63%	65%	70%	75%	80%	85%
Vehicle Preparedness & Operations	72%	74%	77%	81%	85%	89%
Pre-Incident Planning	0%	0%	0%	12%	30%	47%
Standard Operating Procedures	0%	0%	0%	12%	30%	47%
Incident Management System Development	72%	74%	77%	81%	85%	89%
Emergency Incident Operations	81%	82%	85%	87%	90%	92%
Post Incident Analysis	0%	0%	0%	0%	20%	40%
Program Evaluation	0%	0%	0%	0%	10%	32%

Source: OSHA estimates.

Table B-3. Costs and Impacts for a Model Fire Department with 20 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$167	\$167	\$167	\$167
Establishment of Service(s) Capability	\$7,351	\$1,047	\$862	\$0	\$7,351	\$1,047	\$862
Org RMP	\$1,664	\$237	\$195	\$694	\$2,358	\$931	\$889
Medical/Fitness Requirements	\$10,945	\$1,558	\$1,283	\$1,387	\$12,332	\$2,945	\$2,670
Training	\$107	\$15	\$13	\$3,081	\$3,188	\$3,096	\$3,094
Facility Preparedness & PPE	\$883	\$126	\$104	\$4,920	\$5,803	\$5,045	\$5,023
Vehicle Preparedness & Operations	\$334	\$48	\$39	\$1,670	\$2,005	\$1,718	\$1,710
Pre-Incident Planning	\$2,983	\$425	\$350	\$0	\$2,983	\$425	\$350
SOPs	\$2,983	\$425	\$350	\$0	\$2,983	\$425	\$350
Incident Management System Development	\$835	\$119	\$98	\$0	\$835	\$119	\$98
Emergency Incident Operations	\$576	\$82	\$68	\$0	\$576	\$82	\$68
Post Incident Analysis	\$0	\$0	\$0	\$1,342	\$1,342	\$1,342	\$1,342
ER Program Evaluation	\$0	\$0	\$0	\$3,058	\$3,058	\$3,058	\$3,058
Total	\$28,662	\$4,081	\$3,360	\$16,318	\$44,980	\$20,399	\$19,678
Revenue	-	-	-	-	\$2,400,000	\$2,400,000	\$2,400,000
Total Costs as % of Revenue	-	-	-	-	1.87%	0.85%	0.82%
Locality Revenue	-	-	-	-	\$74,193,162	\$74,193,162	\$74,193,162
Total Costs as % of Locality Revenue	-	-	-	-	0.06%	0.03%	0.03%

Source: See PIRFA

Note: Figures may not add to totals due to rounding. Costs are estimated using a 10 year time horizon.

Table B-4. Costs and Impacts for a Model Fire Department with 40 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$197	\$197	\$197	\$197
Establishment of Service(s) Capability	\$8,269	\$1,177	\$969	\$0	\$8,269	\$1,177	\$969
Org RMP	\$1,837	\$262	\$215	\$787	\$2,625	\$1,049	\$1,003
Medical/Fitness Requirements	\$17,562	\$2,500	\$2,059	\$1,575	\$19,137	\$4,075	\$3,634
Training	\$134	\$19	\$16	\$6,991	\$7,125	\$7,010	\$7,007
Facility Preparedness & PPE	\$1,044	\$149	\$122	\$5,584	\$6,628	\$5,733	\$5,707
Vehicle Preparedness & Operations	\$388	\$55	\$45	\$1,861	\$2,249	\$1,917	\$1,907
Pre-Incident Planning	\$3,580	\$510	\$420	\$0	\$3,580	\$510	\$420
SOPs	\$3,580	\$510	\$420	\$0	\$3,580	\$510	\$420
Incident Management System Development	\$931	\$133	\$109	\$0	\$931	\$133	\$109
Emergency Incident Operations	\$653	\$93	\$77	\$0	\$653	\$93	\$77
Post Incident Analysis	\$0	\$0	\$0	\$1,641	\$1,641	\$1,641	\$1,641
ER Program Evaluation	\$0	\$0	\$0	\$3,654	\$3,654	\$3,654	\$3,654
Total	\$37,978	\$5,407	\$4,452	\$22,291	\$60,269	\$27,698	\$26,743
Revenue	-	-	-	-	\$4,800,000	\$4,800,000	\$4,800,000
Total Costs as % of Revenue	-	-	-	-	1.26%	0.58%	0.56%
Locality Revenue	-	-	-	-	\$148,386,324	\$148,386,324	\$148,386,324
Total Costs as % of Locality Revenue	-	-	-	-	0.04%	0.02%	0.02%

Source: See PIRFA.

Note: Figures may not add to totals due to rounding. Costs are estimated using a 10 year time horizon.

Costs for Ambulance ESOs

Program development and planning

OSHA estimated costs for a number of program development activities as shown in Table B-5. The agency estimates that the Emergency Response program, pre-incident planning, standard operating procedures for emergency incidents and other planning activities would take between 20 and 60 hours of a supervisor's time for an ambulance ESO to develop, based on the size of the ESO. Those and other planning and program development times are detailed in Table B-5 below. OSHA welcomes feedback on whether these time estimates seem reasonable. Are these estimates in line with the amount of time spent on these activities at your ESO?

Health and fitness, and medical surveillance

OSHA has preliminarily determined that EMS providers engage in less physically demanding tasks and have a lower risk of exposure to hazardous environments or materials relative to firefighters and therefore EMS providers have fewer health, fitness, and medical exam requirements. As shown in Table B-5, OSHA has preliminarily estimated that ambulance ESOs would need to develop and implement health and fitness plans. OSHA has judged the tests likely necessary for EMS providers based on consultation with occupational physicians and other personnel with experience in the area. The agency has preliminarily determined that EMS providers would not generally need to receive the following periodic exam elements under the draft standard: audiograms, spirometry, EKGs, colonoscopies, CT screenings for lung cancer, HIV screening, blood tests, urinalysis, PSA testing, and TB screening. Similar to firefighters, only EMS providers of certain ages or sexes need given tests. OSHA has preliminarily determined that not every responder would need every type of medical screening exam every year.

The unit costs for medical surveillance for EMS responders are based on the same sources used for firefighters. Likewise, the costs are applied on a per employee basis but – other than the time needed to complete these medical exams – do not depend on the wage.

Qualifications and Training

The initial training time for EMS providers varies widely depending on the responder's certification level. Estimates for training hours for emergency responders, basic EMTs, advanced EMTs and paramedics were based on information from the National Highway Traffic Safety Administration's (NHTSA) Emergency Medical Services (EMS) National Emergency Medical Services Education Standards and UCLA Center for Prehospital Care. NHTSA reports a range of hours of training needed to attain each certification level. Based on an initial assumption that EMS providers at smaller ESOs will have lower levels of certification, OSHA assigned the estimated hours of training at the low end of that range to the smallest establishments (those with <25 and 25-49 employees) and the hours of training estimated at the higher end of that range to the remaining size classes. The agency then estimated the weighted average initial training hours

by multiplying the number of training hours by the estimated share of responders of each certification level.

OSHA used a similar approach to estimate the hours required for ongoing training. OSHA took the estimates for training hours for emergency responders, basic EMTs, advanced EMTs and paramedics from the National Registry of Emergency Medical Technicians, and multiplied those estimates by the estimated share of responders of each certification level to estimate the weighted average ongoing training hours.

The ESO would establish the professional qualifications for responders commensurate with the performance of expected duties and functions of the ESO. The NFPA has established professional qualifications standards for a broad spectrum of emergency responders. The ESO could choose to follow the NFPA qualifications or develop comparable standards.

Baseline Compliance

Table B-6 shows the estimated baseline current compliance rate for each provision of the draft standard, by entity size, for emergency medical service providers. These represent the percentage of ESOs that OSHA believes are currently doing what would be required by a given draft provision. Do these estimates reflect your experiences working in the industry? Are there areas where you believe OSHA has significantly over- or under-estimated compliance?

Table B-5 - Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Emergency Responder Program (ER)									
Develop ER Program	20	24	24	30	40	60	ESO	EMD	One-time
Update and Revise ER Program	4	5	5	6	8	12	ESO	EMD	Annual
Responder Participation-Meetings	8	10	10	12	16	24	ESO	EMT/Paramedic	Annual
Responder Participation-Post Sign	0.05	0.05	0.05	0.05	0.05	0.05	ESO	EMD	Annual
Establishment of Service(s) Capability									
Establishment of Service(s) Capability	12	14	14	18	24	36	ESO	EMD	One-time
Develop Mutual Aid Agreements with other ESOs	1	1	1	1	1	2	ESO	EMD	One-time
Community or Facility Vulnerability and Risk Assessment	40	48	48	60	80	120	ESO	EMD	One-time
Organization Risk Management Plan (RMP)									
Prepare Written RMP	12	14	14	18	24	36	ESO	EMD	One-time
Update Written RMP	5	6	6	8	10	15	ESO	EMD	Annual
Responder Medical/Fitness Requirements									
Minimum Medical Requirement - Statement	8	10	10	12	16	24	ESO	EMD	One-time
Confidential Health Database	0.08	0.08	0.08	0.08	0.08	0.08	Responder	EMD	One-time
Physical Performance Requirement - Statement	8	10	10	12	16	24	ESO	EMD	One-time
Develop Physical Performance Rehabilitation Program	8	10	10	12	16	24	ESO	EMD	One-time
Establish Health and Fitness Program -Written Plan	8	10	10	12	16	24	ESO	EMD	One-time
Implement Health and Fitness Program	8	10	10	12	16	24	ESO	EMD	Annual
Medical Surveillance - Initial	2.5	2.5	2.5	2.5	2.5	2.5	Responder	EMT/Paramedic	One-time
Medical Surveillance - Periodic	2.5	2.5	2.5	2.5	2.5	2.5	Responder	EMT/Paramedic	Varies
Fitness for Duty	0.25	0.25	0.25	0.25	0.25	0.25	Responder	EMT/Paramedic	Varies
Behavioral Health & Wellness Program	1	1	1	2	2	3	ESO	EMD	Annual
Responder Training and Qualifications									
Document Responder Training	8	10	10	12	16	24	ESO	EMT/Paramedic	One-time
Initial New Responder Training	503.84	503.84	761.23	761.23	761.23	761.23	Responder	EMT/Paramedic	Annual
<i>EMR</i>	48	48	60	60	60	60	Responder	EMT/Paramedic	Annual
<i>EMT</i>	120	120	190	190	190	190	Responder	EMT/Paramedic	Annual
<i>Advanced EMT (AEMT)</i>	150	150	250	250	250	250	Responder	EMT/Paramedic	Annual
<i>Paramedic</i>	1,200	1,200	1,800	1,800	1,800	1,800	Responder	EMT/Paramedic	Annual

Table B-5 - Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Ongoing Responder Training	45.67	45.67	45.67	45.67	45.67	45.67	Responder	EMT/Paramedic	Annual
<i>EMR</i>	16	16	16	16	16	16	Responder	EMT/Paramedic	Annual
<i>EMT</i>	40	40	40	40	40	40	Responder	EMT/Paramedic	Annual
<i>Advanced EMT (AEMT)</i>	50	50	50	50	50	50	Responder	EMT/Paramedic	Annual
<i>Paramedic</i>	60	60	60	60	60	60	Responder	EMT/Paramedic	Annual
Refresher Responder Training	2	2	2	2	3	5	Responder	EMT/Paramedic	Annual
Professional Development	20	24	24	30	40	60	Responder	EMT/Paramedic	Annual
Document Professional Qualifications	20	24	24	30	40	60	ESO	EMD	Annual
Facility & Equipment Preparedness									
Facility Preparedness	8	10	10	12	16	24	ESO	EMD	Annual
Equipment Preparedness	40	48	48	60	80	120	ESO	EMD	Annual
Inspect, Maintain, and Test Equipment	40	48	48	60	80	120	ESO	EMD	Annual
PPE Hazard Assessment	2	2	2	3	4	6	ESO	EMD	One-time
PPE Provision	1	1	1	1	2	2	ESO	EMD	One-time
PPE Maintenance	4	5	5	6	8	12	ESO	EMD	Annual
Vehicle Preparedness & Operations									
Written SOPs - Vehicle Preparedness and Operation	12	14	14	18	24	36	ESO	EMD	One-time
Vehicle Inspection and Maintenance	40	48	48	60	80	120	ESO	EMD	Annual
Pre-Incident Planning									
Pre-Incident Planning	20	24	24	30	40	60	ESO	EMD	One-time
Standard Operating Procedures for Emergency Incidents									
SOPs	20	24	24	30	40	60	ESO	EMD	One-time
Incident Management System Development									
Incident Management System Development	20	24	24	30	40	60	ESO	EMD	One-time
Emergency Incident Operations									
Emergency Incident Operations	20	24	24	30	40	60	ESO	EMD	One-time
Communicate Commander/Location of Command Post	0.08	0.08	0.08	0.08	0.08	0.08	ESO	EMD	One-time
Changes to Incident Perimeter	0.25	0.25	0.25	0.25	0.25	0.25	ESO	EMD	One-time
Post Incident Analysis									
Post Incident Analysis	8	10	10	12	16	24	ESO	EMD	Annual
ID/Implement Changes to Pre-Incident Plan	1	1	1	1	1	2	ESO	EMD	Annual

Table B-5 - Unit Burden for Labor-Based Costs by Employment Size Class - Emergency Medical Service Organizations and EMS Providers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
ER Program Evaluation									
ER Program Evaluation	20	24	24	30	40	60	ESO	EMD	Annual
ID and Implement Changes to ER Program	1	1	1	1	1	1	ESO	EMD	Annual

Source: see PIRFA.

Table B-6 - Baseline Compliance Rate by Provision and ESO Size

Provision	ESO Size by Number of Responders					
	<25	25-49	50-99	100-249	250-499	500+
Emergency Response Program	81%	82%	85%	87%	90%	92%
Establishment of Service(s) Capability	7%	12%	25%	37%	50%	62%
Organization Risk Management Plan	7%	12%	25%	37%	50%	62%
Medical/Fitness Requirements	7%	12%	25%	37%	50%	62%
Training	91%	91%	92%	94%	95%	96%
Facility Preparedness & PPE	63%	65%	70%	75%	80%	85%
Vehicle Preparedness & Operations	72%	74%	77%	81%	85%	89%
Pre-Incident Planning	0%	0%	0%	12%	30%	47%
SOPs	0%	0%	0%	12%	30%	47%
Incident Management System Development	72%	74%	77%	81%	85%	89%
Emergency Incident Operations	81%	82%	85%	87%	90%	92%
Post Incident Analysis	0%	0%	0%	0%	20%	40%
Emergency Response Program Evaluation	0%	0%	0%	0%	10%	32%

Source: OSHA Estimates

Table B-7. Costs and Impacts for a Model Emergency Medical Services ESO with 5 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$87	\$87	\$87	\$87
Establishment of Service(s) Capability	\$2,886	\$411	\$338	\$0	\$2,886	\$411	\$338
Org RMP	\$653	\$93	\$77	\$272	\$926	\$365	\$349
Medical/Fitness Requirements	\$3,257	\$464	\$382	\$490	\$3,747	\$954	\$872
Training	\$20	\$3	\$2	\$1,605	\$1,625	\$1,608	\$1,607
Facility Preparedness & PPE	\$65	\$9	\$8	\$1,126	\$1,191	\$1,136	\$1,134
Vehicle Preparedness & Operations	\$197	\$28	\$23	\$656	\$852	\$684	\$679
Pre-Incident Planning	\$1,171	\$167	\$137	\$0	\$1,171	\$167	\$137
SOPs	\$1,171	\$167	\$137	\$0	\$1,171	\$167	\$137
Incident Management System Development	\$328	\$47	\$38	\$0	\$328	\$47	\$38
Emergency Incident Operations	\$226	\$32	\$27	\$0	\$226	\$32	\$27
Post Incident Analysis	\$0	\$0	\$0	\$527	\$527	\$527	\$527
ER Program Evaluation	\$0	\$0	\$0	\$1,229	\$1,229	\$1,229	\$1,229
Total	\$9,974	\$1,420	\$1,169	\$5,992	\$15,966	\$7,412	\$7,162
Revenue	-	-	-	-	\$629,171	\$629,171	\$629,171
Total Costs as % of Revenue	-	-	-	-	2.54%	1.18%	1.14%
Locality Revenue	-	-	-	-	\$19,450,079	\$19,450,079	\$19,450,079
Total Costs as % of Locality Revenue	-	-	-	-	0.08%	0.04%	0.04%

Source: See PIRFA.

Note: Figures may not add to totals due to rounding. Costs are estimated using a 10 year time horizon.

Table B-8. Costs and Impacts for a Model Emergency Medical Services ESO with 30 Responders

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
ER Program	\$0	\$0	\$0	\$103	\$103	\$103	\$103
Establishment of Service(s) Capability	\$3,246	\$462	\$381	\$0	\$3,246	\$462	\$381
Org RMP	\$721	\$103	\$85	\$309	\$1,030	\$412	\$394
Medical/Fitness Requirements	\$10,661	\$1,518	\$1,250	\$567	\$11,228	\$2,085	\$1,817
Training	\$25	\$4	\$3	\$9,420	\$9,444	\$9,423	\$9,423
Facility Preparedness & PPE	\$61	\$9	\$7	\$1,291	\$1,352	\$1,300	\$1,298
Vehicle Preparedness & Operations	\$213	\$30	\$25	\$731	\$944	\$761	\$756
Pre-Incident Planning	\$1,405	\$200	\$165	\$0	\$1,405	\$200	\$165
SOPs	\$1,405	\$200	\$165	\$0	\$1,405	\$200	\$165
Incident Management System Development	\$365	\$52	\$43	\$0	\$365	\$52	\$43
Emergency Incident Operations	\$256	\$37	\$30	\$0	\$256	\$37	\$30
Post Incident Analysis	\$0	\$0	\$0	\$644	\$644	\$644	\$644
ER Program Evaluation	\$0	\$0	\$0	\$1,464	\$1,464	\$1,464	\$1,464
Total	\$18,359	\$2,614	\$2,152	\$14,527	\$32,887	\$17,141	\$16,680
Revenue	–	–	–	–	\$2,036,290	\$2,036,290	\$2,036,290
Total Costs as % of Revenue	–	–	–	–	1.62%	0.84%	0.82%
Locality Revenue	–	–	–	–	\$62,949,486	\$62,949,486	\$62,949,486
Total Costs as % of Locality Revenue	–	–	–	–	0.05%	0.03%	0.03%

Source: See PIRFA.

Note: Figures may not add to totals due to rounding. Costs are calculated using a 10 year time horizon.

While OSHA does not estimate the aggregate costs for SSEs (due to uncertainty over the industry profile), Table B-9 shows OSHA's estimated unit burden and cost for SSEs for each provision of the draft standard. These unit costs are modeled on the time estimates developed for firefighter ESOs, with some adjustment for the specific provisions covering SSEs.

Tables B-10 and B-11 below show calculations of total costs for a model SSE in the 20-99 size class in NAICS 488410 Motor Vehicle Towing with two or five SSWs. These total costs are calculated assuming zero current compliance and annualized over a 10-year time horizon.

Table B-9. Unit Burden in Hours and Cost by ESO Size - Skilled Support Employers

	Employment Size Class						Basis	Labor Category	Frequency
	<25	25-49	50-99	100-249	250-499	500+			
Unit Burden – in Hours									
Establishment of Emergency Services Provided	1	2	2	2	3	4	SSE	Skilled Support Supervisors	One-time
Medical Screening - Initial	1	1	1	1	1	2	SSW	Skilled Support Workers	One-time
Medical Screening - Annual	0.5	0.5	0.5	0.5	0.5	1	SSW	Skilled Support Workers	Annual
Fatigue Management Plan	2	2	2	2	3	5	SSE	Skilled Support Supervisors	One-time
Decontamination SOPs	1	2	2	2	3	4	SSE	Skilled Support Supervisors	One-time
PPE Hazard Assessment	1	1	1	1	1	1	SSE	Skilled Support Supervisors	One-time
Training - Records, etc.	0.65	0.65	0.65	0.65	0.65	1	SSE	Skilled Support Supervisors	One-time
Training - Responder	8	8	8	8	8	8	SSW	Skilled Support Workers	Annual
Worker Participation	1	1	1	2	2	3	SSW	Skilled Support Workers	One-time
Program Evaluation	0.30	0.30	0.30	0.30	0.30	0.30	SSE	Skilled Support Supervisors	Annual
Unit Cost									
Establishment of Emergency Services Provided	\$51	\$103	\$103	\$103	\$128	\$205	SSE	Skilled Support Supervisors	One-time
Medical Screening - Initial	\$35	\$35	\$35	\$35	\$35	\$70	SSW	Skilled Support Workers	One-time
Medical Screening - Annual	\$18	\$18	\$18	\$18	\$18	\$35	SSW	Skilled Support Workers	Annual
Fatigue Management Plan	\$103	\$103	\$103	\$103	\$154	\$257	SSE	Skilled Support Supervisors	One-time
Decontamination SOPs	\$51	\$103	\$103	\$103	\$128	\$205	SSE	Skilled Support Supervisors	One-time
PPE Hazard Assessment	\$26	\$26	\$26	\$26	\$26	\$51	SSE	Skilled Support Supervisors	One-time
Training - Records, etc.	\$33	\$33	\$33	\$33	\$33	\$51	SSE	Skilled Support Supervisors	One-time
Training - Responder	\$282	\$282	\$282	\$282	\$282	\$282	SSW	Skilled Support Workers	Annual
Worker Participation	\$35	\$35	\$35	\$70	\$70	\$106	SSW	Skilled Support Workers	One-time
Program Evaluation	\$15	\$15	\$15	\$15	\$15	\$15	SSE	Skilled Support Supervisors	Annual

Sources: See PIRFA.

Note: Unit costs are shown with zero decimal places, but unrounded figures are used in the underlying calculations.

**B-10. Costs and Impacts for a Model SSE with 2 SSWs
In NAICS 488410 Motor Vehicle Towing, 20-99 employment size class**

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Emergency Services Provided	\$51	\$7	\$6	\$0	\$51	\$7	\$6
Medical Screening - Initial	\$70	\$10	\$8	\$0	\$70	\$10	\$8
Medical Screening - Annual	\$0	\$0	\$0	\$35	\$35	\$35	\$35
Fatigue Management Plan	\$103	\$15	\$12	\$0	\$103	\$15	\$12
Decontamination SOPs	\$51	\$7	\$6	\$0	\$51	\$7	\$6
PPE Hazard Assessment	\$26	\$4	\$3	\$0	\$26	\$4	\$3
Training - Records, etc.	\$33	\$5	\$4	\$0	\$33	\$5	\$4
Training - Responder	\$0	\$0	\$0	\$564	\$564	\$564	\$564
Worker Participation	\$70	\$10	\$8	\$0	\$70	\$10	\$8
Program Evaluation	\$0	\$0	\$0	\$15	\$15	\$15	\$15
Total	\$405	\$58	\$48	\$615	\$1,020	\$672	\$662
Revenue	-	-	-	-	\$3,332,254	\$3,332,254	\$3,332,254
Total Costs as % of Revenue	-	-	-	-	0.03%	0.02%	0.02%

Source: See PIRFA.

Notes: Figures may not add to totals due to rounding. Costs annualized over a 10 year time horizon.

**B-11. Costs and Impacts for a Model SSE with 5 SSWs
In NAICS 488410 Motor Vehicle Towing, 20-99 employment size class**

	One-Time			Annual	First Year (One-Time Plus Annual)	Total (One-Time Plus Annual)	
	Undiscounted	Discounted - 7%	Discounted - 3%	Undiscounted	Undiscounted	Discounted - 7%	Discounted - 3%
Establishment of Emergency Services Provided	\$51	\$7	\$6	\$0	\$51	\$7	\$6
Medical Screening - Initial	\$176	\$25	\$21	\$0	\$176	\$25	\$21
Medical Screening - Annual	\$0	\$0	\$0	\$88	\$88	\$88	\$88
Fatigue Management Plan	\$103	\$15	\$12	\$0	\$103	\$15	\$12
Decontamination SOPs	\$51	\$7	\$6	\$0	\$51	\$7	\$6
PPE Hazard Assessment	\$26	\$4	\$3	\$0	\$26	\$4	\$3
Training - Records, etc.	\$33	\$5	\$4	\$0	\$33	\$5	\$4
Training - Responder	\$0	\$0	\$0	\$1,410	\$1,410	\$1,410	\$1,410
Worker Participation	\$176	\$25	\$21	\$0	\$176	\$25	\$21
Program Evaluation	\$0	\$0	\$0	\$15	\$15	\$15	\$15
Total	\$617	\$88	\$72	\$1,513	\$2,130	\$1,601	\$1,586
Revenue	–	–	–	–	\$3,332,254	\$3,332,254	\$3,332,254
Total Costs as % of Revenue	–	–	–	–	0.06%	0.05%	0.05%

Source: See PIRFA.

Notes: Figures may not add to totals due to rounding. Costs are annualized over a 10 year time horizon.

Appendix C. Medical Exam Unit Costs

Table C-1. Medical Exam Estimated Percent of Responders Needing Tests and Unit Costs

Exam	Responders	% Receiving [b]	Unit Cost (for All Potential Exams)
Fire Departments			
Initial Medical Surveillance			
General Health Assessment [c]	524,489	100%	\$239.37
Cardiopulmonary Function [d]	524,489	84%	\$54.00
Immunological [e]	524,489	100%	\$53.28
<i>Initial Subtotal</i>	<i>524,489</i>	<i>97%</i>	<i>\$346.65</i>
Periodic Medical Surveillance			
General Health Assessment [f]	524,489	100%	\$196.89
Cardiopulmonary Function [d]	524,489	33%	\$54.00
Cancer Screening [g]	524,489	10%	\$679.17
Immunological [h]	524,489	11%	\$496.53
<i>Periodic Subtotal</i>	<i>524,489</i>	<i>24%</i>	<i>\$1,426.59</i>
Medical Surveillance Total			
Initial and Periodic Total	524,489	38%	\$1,773.24
Emergency Medical Services			
Initial Medical Surveillance			
General Health Assessment [c]	365,025	100%	\$222.60
Cardiopulmonary Function [d]	365,025	84%	\$54.00
Immunological [e]	365,025	100%	\$53.28
<i>Initial Subtotal</i>	<i>365,025</i>	<i>97%</i>	<i>\$329.88</i>
Periodic Medical Surveillance			
General Health Assessment [f]	365,025	81%	\$180.12
Cancer Screening [g]	365,025	1%	\$679.17
Immunological [h]	365,025	9%	\$496.53
<i>Periodic Subtotal</i>	<i>365,025</i>	<i>14%</i>	<i>\$1,409.82</i>
Medical Surveillance Total			
Initial and Periodic Total	365,025	30%	\$1,739.71
Total/Average			
Initial Medical Surveillance			
General Health Assessment [c]	889,514	100%	\$232.49
Cardiopulmonary Function [d]	889,514	84%	\$54.00
Immunological [e]	889,514	100%	\$53.28
<i>Initial Subtotal</i>	<i>889,514</i>	<i>97%</i>	<i>\$339.77</i>
Periodic Medical Surveillance			
General Health Assessment [f]	889,514	93%	\$190.01
Cardiopulmonary Function [d]	889,514	19%	\$54.00
Cancer Screening [g]	889,514	6%	\$679.17
Immunological [h]	889,514	10%	\$496.53
<i>Periodic Subtotal</i>	<i>889,514</i>	<i>20%</i>	<i>\$1,421.79</i>
Medical Surveillance Total			
General Health Assessment	889,514	97%	\$422.50
Cardiopulmonary Function	889,514	52%	\$108.00

Table C-1. Medical Exam Estimated Percent of Responders Needing Tests and Unit Costs

Exam	Responders	% Receiving [b]	Unit Cost (for All Potential Exams)
Cancer Screening	889,514	6%	\$679.17
Immunological	889,514	19%	\$549.81
Initial and Periodic Total	889,514	35%	\$1,761.56

Sources: See PIRFA.

Appendix D. Costs for Regulatory Alternatives

Alternative	One-Time	Annual	Total (One-Time Plus Annual)	Difference from Draft Standard
	Undiscounted	Undiscounted	Discounted - 3%	Discounted - 3%
Draft Standard	\$549,755,490	\$591,886,330	\$656,334,444	\$0
1. Exempt all ESOs whose responders are all volunteers	\$353,650,747	\$395,111,992	\$436,570,648	-\$219,763,796
2a. Exempt all volunteer ESOs if the population served is ≤ 2,500	\$548,877,470	\$591,323,633	\$655,668,817	-\$665,627
2b. Exempt all volunteer ESOs if the population served is ≤ 5,000	\$547,208,323	\$590,128,394	\$654,277,903	-\$2,056,541
2c. Exempt all volunteer ESOs if the population served is ≤ 10,000	\$526,461,891	\$573,743,065	\$635,460,459	-\$20,873,985
2d. Exempt all volunteer ESOs if the population served is ≤ 25,000	\$421,448,790	\$480,689,140	\$530,095,795	-\$126,238,649
2e. Exempt all volunteer ESOs if the population served is ≤ 50,000	\$385,094,259	\$443,036,664	\$488,181,459	-\$168,152,985
3a. Remove the requirement for initial medical surveillance	\$349,612,264	\$591,886,330	\$632,871,552	-\$23,462,892
3b. Remove the requirement for periodic medical surveillance	\$549,755,490	\$418,879,807	\$483,327,922	-\$173,006,522
3c1. Require periodic medical surveillance every two years	\$549,755,490	\$418,879,807	\$571,109,556	-\$85,224,888
3c2. Require periodic medical surveillance every three years	\$549,755,490	\$418,879,807	\$552,621,091	-\$103,713,353
4. Medical surveillance not full NFPA 1582	\$519,734,006	\$565,935,351	\$626,864,032	-\$29,470,412
4a. Medical surveillance would not include an immunological component	\$517,599,630	\$560,497,570	\$621,176,037	-\$35,158,407
4b. Medical surveillance would not include cancer screening.	\$549,755,490	\$564,525,560	\$628,973,675	-\$27,360,770
4c. Medical surveillance would not include cardiopulmonary tests.	\$522,473,415	\$585,187,426	\$646,437,249	-\$9,897,195
4d. Medical surveillance questionnaire	\$369,626,587	\$436,180,460	\$479,511,972	-\$176,822,473
5a. Remove requirements to assess fitness for duty	\$549,755,490	\$564,473,680	\$628,921,794	-\$27,412,650
5b1. Assess fitness for duty every two years	\$549,755,490	\$564,473,680	\$642,830,676	-\$13,503,769
5b2. Assess fitness for duty every three years	\$549,755,490	\$564,473,680	\$639,901,203	-\$16,433,241
6a. Remove requirements for health and fitness programs	\$532,867,135	\$574,997,974	\$637,466,259	-\$18,868,186
6b. Remove requirements for behavioral health and wellness programs	\$549,755,490	\$588,550,410	\$652,998,524	-\$3,335,920
7. Remove the requirement to maintain a confidential health database/health file	\$544,180,092	\$591,886,330	\$655,680,838	-\$653,607
8. Reduce initial firefighter training	\$549,755,490	\$573,998,508	\$638,446,622	-\$17,887,822
9. Remove requirements that responders have certain professional qualifications	\$549,755,490	\$587,743,227	\$652,191,341	-\$4,143,103
10. Remove requirements that equipment meet specified design and manufacturing requirements	\$549,755,490	\$588,598,576	\$653,046,690	-\$3,287,754
11. Remove the requirement for PPE to be compliant with consensus standards	\$549,188,864	\$591,886,330	\$656,268,018	-\$66,426
12. Remove certain groups of ESOs from the requirement to meet particular provisions of the standard [a]	[a]	[a]	[a]	[a]
Alternatives Addressing Skilled Support Employers				

Appendix D. Costs for Regulatory Alternatives

Alternative	One-Time	Annual	Total (One-Time Plus Annual)	Difference from Draft Standard
	Undiscounted	Undiscounted	Discounted - 3%	Discounted - 3%
13. Exclude all or some types of SSEs from the scope of the standard [a]	[a]	[a]	[a]	[a]
14a. Remove the requirement for physical performance and fitness for duty evaluations for SSWs [a]	[a]	[a]	[a]	[a]
14b1. Assess SSW fitness for duty every two years [a]	[a]	[a]	[a]	[a]
14b2. Assess SSW fitness for duty every three years [a]	[a]	[a]	[a]	[a]
15a. Remove the requirement for pre-incident training for SSWs [a]	[a]	[a]	[a]	[a]
15b. Reduce the required training for SSWs [a]	[a]	[a]	[a]	[a]
16 Delete or reduce the requirements for worker participation for SSWs	[b]	[b]	[b]	[b]
17. Create a new subsection for disaster site workers and move applicable SSE requirements into it [Not modeled]	[b]	[b]	[b]	[b]
18. Increase or decrease the level of specification in the standard for various elements	[b]	[b]	[b]	[b]
19. Include requirements from other OSHA standards in the draft Emergency Response standard.	[b]	[b]	[b]	[b]

Source: OSHA.

Notes:

[a] Total cost savings not estimated but alternative would be burden reducing.

[b] Total cost impacts not estimated but alternative would likely result in no changes to total costs.

Figures may not add to totals due to rounding.