

NFPA 1900:

What's New and Why

On January 1, 2024, a new National Fire Protection Association (NFPA) standard will go into effect for fire apparatus contracted from that date forward. The new standard will combine NFPA 1901, Standard for Automotive Fire Apparatus; NFPA 1906, Standard for Wildland Fire Apparatus; NFPA 414, Standard for Aircraft Rescue and Fire-Fighting Vehicles; and NFPA 1917, Standard for Automotive Ambulances. The new standard is NFPA 1900, Standard for Aircraft Rescue and Firefighting Vehicles, Automotive Fire Apparatus, Wildland Fire Apparatus, and Automotive Ambulances. Why put all the standards together? The NFPA administration made a high-level decision to combine related standards into groups. I believe they felt there would be an advantage to some users who could purchase a single document that would cover all of what they would need rather than purchasing several single documents. For us on the apparatus committee, it was a lot of work. We needed to coordinate with the ambulance and ARFF committees, splitting the work up one chapter at a time. On the plus side, we did take the opportunity to consolidate the old structural and wildland chapters so that the specific differences between them are more clear.

CHANGES EXPLAINED

Besides being a combination of several standards, there were a number of changes about which fire departments should be aware. Following are explanations on some of the major content changes. Electric Vehicle (EV) Accommodation: Most fire departments will not purchase an apparatus that is not NFPA-compliant. If the standard says you need an alternator or a muffler, an EV apparatus without those items would be technically noncompliant. So, NFPA 1900 is written to be clear that those features or requirements that are internal-combustion- engine-specific are only required if the apparatus has the need for them.

Night Mode for Warning Lights: There was a lot of discussion over the advantages of modifying warning lights when operating at night. There are really two reasons for this, and they both have to do with the advent of LED lighting. In the old days, the amount of light an incandescent lamp could put out was capped by the size of the alternator you had on the truck. The NFPA established a minimum amount of lighting intensity to make sure the apparatus could be seen during the daytime. An apparatus that does not exceed that minimum standard by too much has reasonable daytime visibility and still will not be too obnoxious at night. Any modern apparatus will use LED lights. This technology can produce much more intense lighting and will greatly exceed the minimum requirements that were set by the NFPA years ago. This is a great thing for visibility during the day when the apparatus is competing with the sun. But at night, the contrast between these very bright flashing lights and a potentially pitch-black background is distracting both for first responders and passing motorists.

The second thing that came with LED lights is the speed with which they get to their maximum brightness. An incandescent bulb needs to heat up before it can glow, and this means that when it comes on, it comes on more gradually. When LED lights come on, they reach their maximum intensity almost immediately. Researchers have found that humans are less stressed by the smoother on-and-off of an incandescent light flashing than the very abrupt characteristic of an LED light. The NFPA committee weighed both these factors, and some of the draft language included consideration for limiting the intensity of the lighting at night as well as the profile and speed of the flash patterns. In the end, we decided not to force the issue at this time but added guidance in the annex for those departments wishing to adopt a night mode feature. This approach allows an apparatus to just meet the long-established minimum requirements at night and then far exceed the minimum requirements during the day. I suspect that as the lighting industry evolves the standard will evolve as well.

Stabilizer Pad Size:

This change was made to reduce ground pad size. The maximum ground pressure came from the civil engineering world, and the committee felt that the change was rational.

Seating:

The new seating requirements were really intended to encourage departments to consider the impact of seating during the apparatus specification process. Many apparatus have more seats in the crew cab than are normally occupied during a response. If that is the case, the new standard allows you to configure in a way that provides more room for those seating positions that will normally be occupied at the expense of those that will not. The physical space in the cab can't really grow because we are limited by regulatory width restrictions as well as the practical desire for narrower cabs to improve maneuverability. The key is getting the truck committee to think about their seating decisions and maximize the comfort of personnel who will be riding in the cab most of the time.

Rear Chevron Striping:

Chevron striping has always been a contentious topic for the apparatus committee. The rear chevrons definitely improve conspicuity. One school of thought is that the color of the chevrons is not that important to making sure the truck can be seen from the rear as long as those colors are retroreflective and contrasting. Keep in mind that during a response you also have all those intense LED warning lights flashing at the same time, so what is the problem with letting a fire department use blue and white if it wants to? The other school of thought is that we wanted a consistent color scheme so that every fire apparatus would stand out as a fire truck. Civilians would get used to seeing the yellow and red chevrons and associating that pattern with a fire truck. The counter to that argument is that the scheme is not unique to fire apparatus anyway. This same pattern and color have become popular on other heavy trucks like refuse trucks, utility trucks, and others. There were strong opinions on both sides of the argument, and those who were OK with allowing the varying colors were in the majority.

Equipment Requirements:

During the process of combining all the chapters, one of the members pointed out that the apparatus committee had exceeded its charter years ago. The scope of the document is minimum requirements for: "... the design, performance, acceptance criteria, and testing of aircraft rescue and firefighting apparatus, new automotive fire apparatus and trailers, wildland fire apparatus, and automotive and remounted ambulances." When you study this statement, it is not intended to consider what you carry on the apparatus at all. So, NFPA 1900 no longer requires that specific hose, ladders, or miscellaneous equipment be included on the truck. All that information is still in the standard, but it was moved to the annex as recommendations rather than requirements. This allows departments to carry those items that they feel are important based on the way they operate.

FUTURE EVOLUTION

NFPA 1900 is a significant evolution of several standards. As we move forward, it will continue to evolve. I would like to see us continue to at least question whether all the requirements are essential. Some of the requirements were added to the standard years ago when the industry was less mature, and some of the requirements are

operational in nature rather than safety- related. I hope the committee will do some “housekeeping” with an eye toward ensuring that we are not exceeding the scope as setting out “minimum” standards, not just “nice to have” standards. I would also like to ensure that the wording of the standard is always calling out “performance” standards rather than dictating the specifics of how that performance is achieved. This approach leaves departments and designers more open to innovation and provides flexibility for adapting to new technologies as they are developed.

The Fire Apparatus Manufacturers’ Association (FAMA) has published a guide titled, “Fire Apparatus Standard Changes 2024.” It presents highlights of changes in NFPA 1900 and is for reference only. It can be downloaded at <https://www.fama.org/fire-service-resources-list/> . FAMA is committed to the manufacture and sale of safe, efficient emergency response vehicles and equipment. FAMA urges fire departments to evaluate the full range of safety features offered by its member companies.

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