HIGH SCHOOL FIRE & EMS PROGRAMS AND ACADEMIES: OPPORTUNITIES & CHALLENGES

Report of the National Fallen Firefighters Foundation High School Technical Curriculum Online Workshop

October 25-26, 2016

NATIONAL FALLEN FIREFIGHTERS FOUNDATION®

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Acknowledgements

The National Fallen Firefighters Foundation (NFFF) would like to thank the Maryland Fire and Rescue Institute and Executive Director Steve Edwards for providing a venue for this workshop.

We would also like to acknowledge Steve Austin for facilitating the meeting, and Cathleen Corbitt-Dipierro, writer and interactive designer for Stonehouse Media Incorporated, for her work on this White Paper.

The NFFF would also like to gratefully acknowledge all the individuals who participated in this workshop and generously shared their knowledge and opinions.

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Cover Photo: Students from the Washington County (MD) High School Fire & Rescue Academy participate in the "Texas Two Step" hose line management/advancement evolution being conducted at the Hagerstown (MD) Fire Department Training Center. *(Photo by Jamie Drawbaugh, Washington County (MD) High School Fire & Rescue Academy)*

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List of Acronyms

ACTE	Association for Career and Technical Education
CTBS	Courage To Be Safe®
EGH	Everyone Goes Home®
EMS	Emergency Medical Services
FESHE	Fire and Emergency Services Higher Education
FHLN	Fire Hero Learning Network
HAZMAT	Hazardous Materials
IAFF	International Associations of Fire Fighters
IEP	Individualized Education Program
LACK	Leadership, Accountability, Culture, and Knowledge
LODD	Line-of-Duty Death
MFRI	Maryland Fire and Rescue Institute
MOU	Memorandum of Understanding
NFFF	National Fallen Firefighters Foundation
NVFC	National Volunteer Fire Council
TCOOO	Taking Care of Our Own®
VCOS	Volunteer & Combination Officers Section (International Association of Fire Chiefs)

Introduction

I am pleased to present the final report of the National Fallen Firefighters Foundation (NFFF) High School Technical Curriculum Online Workshop. The workshop was held in October 2016, at the Maryland Fire and Rescue Institute (MFRI) in College Park, Maryland. The NFFF was honored to be able to bring together a group of administrators and instructors from successful high school programs, state training officials, representatives of national constituency organizations, and experts in current learning practices to discuss ways that the NFFF can support high school fire and EMS cadet programs, and to develop material for this group to advance the goals of reducing line-of-duty injuries and deaths.

High school cadet programs are very near and dear to my heart. As a teen, I was a cadet in a Boy Scout program in Monessen, Pennsylvania. More recently, I have been an instructor with a cadet program on the Eastern Shore of Maryland. The program is county-based; students spend mornings traditionally in one of two local high schools, and move to the MFRI Eastern Shore facility for afternoon drills and instruction. After graduation, over 90% of these cadets have gone on to become active volunteers for local departments.

The controlled environment of a high school cadet program is the ideal way to introduce teens to the hazards of firefighting. As in our county, the outcomes can be impressive. These programs provide a consistent stream of trained candidates for volunteer systems, and offer an opportunity for individuals to evaluate firefighting as a potential career. They have also proved to be the ideal environments to introduce our next generation of firefighters to the 16 Firefighter Life Safety Initiatives and the full range of Everyone Goes Home® health and safety training programs. Safe practices established early will serve these young men and women for a lifetime.

In closing, I would like to thank DHS-FEMA's Assistance to Firefighters Fire Prevention & Safety Grant Program for making this project possible, and Everyone Goes Home® Advocate Steve Austin for facilitating this meeting and overseeing development of this White Paper. I would also like to express my appreciation to all of the presenters and attendees who brought their experience and expertise to the discussions regarding innovative ways to advance health and safety within our cadet programs.

Sincerely,

Chief Ronald J. Siarnicki
Executive Director
National Fallen Firefighters Foundation

Executive Summary

On October 25-26, 2016, the National Fallen Firefighters Foundation convened the NFFF High School Technical Curriculum Online Workshop at the Maryland Fire and Rescue Institute in College Park, Maryland. This meeting brought together approximately 20 educators and leaders from Fire & EMS high school academies, state training networks, and national fire service organizations. The goals of the workshop were to:

1. Identify ways to strengthen the firefighter health and safety education component of fire & EMS high school academy curricula;
2. Brainstorm how to reach young people using the ways they like to learn; and
3. Assess the potential role for online training modules within the fire & EMS high school academy model.

To open the meeting, five subject matter experts discussed foundational topics related to teaching firefighter health and safety to high school-age students. These presentations included case studies of successful existing programs and an informative session on teaching methodologies that are successful with this generation of learners. During and after the presentations, the group explored a wide range of issues and concerns facing the effort to begin the education and training of future fire and EMS professionals during high school. Through guided discussion, the group then turned its attention to the potential role that online training might have within the fire & EMS high school academy model.

The group achieved consensus on many points, including that online learning is feasible and desirable for most high school programs. Because programs are so varied, schools will need to discern a process for its integration that includes working with the school board, administrators, and the local fire training system, and may require a stepped implementation over time. The group also determined that incorporating the Everyone Goes Home® program's 16 Firefighter Life Safety Initiatives into Firefighter I curricula would be a viable option, because most programs already utilize Firefighter I. This would provide a seamless pathway by which to integrate additional firefighter health and safety training into their existing instruction.

Workshop participants also identified best practices within successful programs, as well as emerging issues that may face high school fire & EMS programs and academies. Based on this discussion and the conclusions of the group, the following recommendations were developed to outline steps that will help to move these programs forward:

1. Undertake a national survey of fire & EMS programs and academies in U.S. high schools.
2. Explore the creation of a national organization for high school fire & EMS programs and academies.
3. Develop a correlation between Firefighter I, the 16 Firefighter Life Safety Initiatives, and available resources to teach high school students about the 16 Firefighter Life Safety Initiatives and their underlying health and safety topics.

4. Engage labor in the effort to properly prepare the next generation of firefighters beginning at the high school level.
5. Develop online training programs on the NFFF's Fire Hero Learning Network to address firefighter health and safety issues not covered by current offerings.
6. Create materials and conduct outreach to local departments and school districts to explain the fire and EMS high school academy concept, the diversity of approaches, and how to get started.
7. Create mechanisms for fire & EMS administrators and instructors working with high school students to network, exchange knowledge, seek assistance with challenges, and learn best practices.
8. Explore how online learning platforms from national organizations and state training systems can be linked as seamlessly as possible to enable students to access health and safety training modules easily and comprehensively.

Background

The National Fallen Firefighters Foundation and the Everyone Goes Home® Program

In 1992, Congress created the National Fallen Firefighters Foundation to honor America's fallen firefighters and provide their survivors with the resources they need to rebuild their lives. In 2004, the NFFF expanded its mission to include the prevention of line-of-duty deaths and injuries by delivering firefighter health and safety training, resources, and advocacy under the Everyone Goes Home® program. The 16 Firefighter Life Safety Initiatives were created to support the Everyone Goes Home® program; each initiative focuses on a specific element of the fire service that impacts firefighter health and safety. While training and firefighter education at all levels is an important component of all 16 Initiatives, the focus of this program was to specifically address Firefighter Life Safety Initiative #1, which states: *Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility.* A complete list of the 16 Firefighter Life Safety Initiatives is included in Appendix A.

Firefighter Life Safety Initiative #1 — Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility.

Synopsis

On October 25-26, 2016, the National Fallen Firefighters Foundation convened the NFFF High School Technical Curriculum Online Workshop at the Maryland Fire and Rescue Institute, in College Park, Maryland. Steve Austin facilitated this meeting of leaders and educators from Fire & EMS high school academies, state training networks, and national fire service organizations; a complete list of attendees is available in Appendix B. The three primary goals that guided the agenda and discussion at the NFFF High School Technical Curriculum Online Workshop were to:

1. Identify ways to strengthen the health and safety education component of fire & EMS high school academy curricula so the teaching of the 16 Life Safety Initiatives is institutionalized at the high school level;
2. Brainstorm how to reach young people using appropriate methodologies; and
3. Assess the potential role for online training modules within the fire & EMS high school academy model.

To open the meeting, five subject matter experts provided presentations on areas of interest to the group. During and after these presentations, the group explored a wide range of foundational topics facing the effort to begin the education and training of future fire & EMS professionals during their high school years. This report will provide an overview of the speakers' guiding messages during the opening presentations, summarize the group discussions, and make recommendations for future research and development in regards to issues pertinent to the fire & EMS academies.

Presentation Summaries

Maryland Fire & EMS High School Programs Structure

Steve Edwards, Director, Maryland Fire and Rescue Institute (MFRI)

Director Steve Edwards outlined the structure guiding Maryland's fire & EMS high school programs. Currently, Maryland has cadet programs in thirteen counties. MFRI has an agreement with the Maryland State Department of Education Division of Career Technology & Adult Learning so that high school fire & EMS programs are consistent across all schools and compliant with the state's high school education requirements. The agreement has improved cooperation, the fire service's understanding of education, and the Board of Education's understanding of the fire service. A copy of this agreement was made available for the workshop participants.

Everyone Goes Home® and National Fallen Firefighters Foundation Firefighter Health and Safety Programs

Victor Stagnaro, Director of Fire Service Programs, NFFF

Mr. Stagnaro gave an overview of the National Fallen Firefighters Foundation's history and mission, and the major firefighter health and safety programs available through the NFFF's Everyone Goes Home® program.

Regional Advocates are the volunteer "boots on the ground" for the program; they respond to needs on behalf of the NFFF and conduct local training classes. Programs that are available via classroom training by Advocates include:

- Courage to Be Safe®
- Stress First Aid for Fire and EMS Personnel
- Taking Care of Our Own®
- Response to Violent Incidents
- Leadership, Accountability, Culture, and Knowledge (LACK)

The NFFF currently has memoranda of understanding (MOUs) in place with 13 states, which mandate training in NFFF courses like Courage to Be Safe®, LACK, and Stress First Aid for credentials and for certifications. The Advocates are also responsible for disseminating information at the local level about other NFFF programs, including the Seatbelt Pledge.

The NFFF's online Fire Hero Learning Network (fhln.net) hosts versions of Courage to be Safe®, Stress First Aid, and Taking Care of Our Own®, as well as After Action Review and Company Officer Development modules. A series of operational checklists is available on the FHLN, and a new program on Fire Attack and Suppression Decision Making will be publicly released in 2017.

The NFFF's documentary videos have proved to be effective training tools for many organizations. These feature departments that have made posi-

tive change as a result of one or more line-of-duty deaths and highlight individual stories of survivors, clearly showing the effects of not following safety procedures. New York, Chicago, Denver, and Charleston have all been the subject of these videos, which are available on the everyonegoeshome.com website.

Mr. Stagnaro indicated that the NFFF is always looking for gaps in the health and safety area to fill and develop training to support what other organizations are doing. Examples of current efforts include:

- **Fire Service Occupational Cancer Alliance** — the NFFF is coordinating this collaborative effort among fire service organizations to disseminate information, support training and cancer prevention efforts, and to advocate for additional research into fire service occupational cancers and for presumptive laws covering firefighter occupational cancers.
- **Behavioral Health** — the NFFF has been an industry leader in supporting access to the best in evidence-informed psychological support for firefighters. Mr. Stagnaro noted that a department is three times more likely to experience a suicide than a line-of-duty death. Currently, the NFFF is partnering with academic researchers in a study on depression and suicide, and developing materials and an online app for use as tools in peer support and suicide prevention.
- ***Vulnerability Assessment Program (VAP)*** — the VAP is an online risk assessment tool for fire service organizations that addresses operational policies, staffing, training, equipment, and culture within the department. After completing the survey questions, organization leaders can download a detailed assessment of the department's risk factors for a line-of-duty death or injury, as well as resources that can be used to address those vulnerabilities.

How Millennials Learn

Dr. Candice McDonald, Firefighter/Public Information Officer, Sebring (OH) Fire Department

Dr. McDonald[1] has extensive experience in working with this cohort, and shared multiple insights into their personalities and learning styles. According to Dr. McDonald, millennials were parented differently than previous generations, and respond to different motivational tools. She stated that they need to know why a particular topic is important and that emotion (such as in NFFF documentaries) can be an important hook to engage them in a lesson. Dr. McDonald asserted that millennials are driven by rewards and competition. She believes they are accustomed to constant feedback and thus want to hear how they are doing and like to be asked for input regarding the instructor's performance.

[1] In between the date this meeting was held and the date this paper was written, Ms. McDonald earned her PhD. Thus, she is referred to as Dr. McDonald in this white paper.

Dr. McDonald stated that this generation grew up learning and spending recreational time online, thus she encourages her students to bring their devices to class. While these devices may appear to be a distraction, she finds that students are often using them for research or seeking additional information about the topic during the lesson. Her students are also particularly eager to engage in "gamified" lessons, and "chunking" the material into "bite-sized learning" yields better results for her.

Dr. McDonald also encouraged finding ways to incorporate social media into e-learning. She stressed removing barriers to participation, and making it as simple as possible for students to engage. She believes that a single login scheme is preferable; integrating access to the program's site sign in mechanism with an existing platform like Google or Facebook is ideal. "Hashtagging" lessons, and hosting outside of class discussions on social media platforms can again reinforce classroom work.

Dr. McDonald stressed that, as educators and leaders, we need to be flexible enough to adapt to meet the needs of our future stakeholders. In addition to the emphasis on online learning methods, she also recommended making extensive use of hands-on learning, stating that 70% of learning is done on the job in an apprenticeship fashion. In her experience, making learning fun and flexible, and again breaking lessons in digestible components, will meet the learning needs of millennials. Also, this cohort seeks job and life satisfaction beyond the paycheck, so she emphasizes the non-wage benefits of firefighting to her students.

Discussion during this session noted that a high percentage of students in fire & EMS high school programs have an Individualized Education Program (IEP), which poses its own challenges for instructors. Also, participants discussed the history of some fire & EMS high school programs or academies as a "dumping ground" for students who do not achieve highly on traditional measures of academic success. This practice poses myriad challenges for the both program and the instructors, as motivation is often lacking. In the attendees' collective experience, this practice is becoming less common, and the trend over time has been toward more rigorous entrance requirements for fire & EMS academies. It was also pointed out that additional training is needed in many areas so instructors at the high school level can help all students succeed. The group identified continuing education needs for instructors to be: facility with technology, culture changes in the fire service in recent years, updated safety practices, and teaching methods. While the general focus is on the needs of learners, we also need to address the needs of instructors who are expected to teach these learners, and may be lacking the training, tools, and support needed to teach effectively and engagingly.

Washington County (MD) Technical High School Fire & Rescue Academy

Jamie Drawbaugh, Training Coordinator

Mr. Drawbaugh provided an oral history of the Fire & Rescue Academy at Washington County Technical High School, which is widely recognized as a rigorous program that succeeds in preparing and graduating candidates who are ready to volunteer for or be hired into fire & EMS positions.

Five years ago, the Academy was about to fail, but has since undergone a complete restructuring. In 2014, they were awarded the Junior Firefighter Program of the Year Award by the National Volunteer Fire Council. The Academy now has its own site and busses, and functions as a magnet school for the district. On Monday, Wednesday and every other Friday, the cadets are at the Academy all day. Because they are no longer students at their home schools, they spend the other days of the week at Washington County Technical High School campus. The Academy operates as an independent school, and has its own fire service graduation, complete with pipe and drums.

Stringent entrance requirements, including interviews, interviews with parents, and a life skills assessment have fostered competition for entry; last year 86 students applied and 16 were admitted. The program has a paramilitary culture and is structured like a career academy, with a rank structure, lead cadet, platoon leaders, and chain of command. It is a two-year program: Year 1 is EMS and Rescue. The main focus of Year 2 is fire-related classes. The EMS year classes include CPR/AED for the first responder, BPP, PEAF, Haz-Mat Operations, MD State EMT, with the opportunity for NR, Site Ops, and Rescue Tech Vehicle & Machinery. The Fire year classes include CPR/AED, BBP, PEAF, Haz-Mat Operations, Firefighter I, Firefighter II, Engine Company Operations, Truck Company Operations, and Arson Detection for first responders. The program has three core instructors; all are MFRI-certified. Burns and practical exercises are part of the curriculum, and additional trained instructors are on hand for these exercises.

Discipline issues in academics are referred directly to Mr. Drawbaugh. To date, they have not experienced discipline issues in the Academy, perhaps because of the stringent entrance requirements. He noted that Washington County Workman's Compensation Insurance covers injuries to students, but no claims have been filed to date.

The Academy has been successful in working with the school district to procure technology (laptops, iPads, wi-fi) that enables the program to take advantage of online training opportunities. All students use ResponderSafety.Com for their roadway safe operations training. The Academy utilizes NFFF training in safety practices like the Seatbelt Pledge, as well as assignments such as researching an LODD incident. The Academy's cadets also provide support for the National Fallen Firefighters Memorial Weekend.

The online learning that the students are assigned is strongly encouraged but not yet mandated; the Academy is working on getting it incorporated

into the curriculum. However, this has proved to be challenging because of state and district requirements, though most students do complete it. It was also noted that the Academy has a comprehensive social media policy covering all use.

In closing, Mr. Drawbaugh observed that training at this level is changing the safety culture in his area. Safety practices that were not part of the instructors' training as young firefighters, such as gear and hand washing, are now being taught at the Academy to the next generation of fire and EMS personnel. He proudly noted that the quality of the graduates of this Academy is actually creating waves in the local departments (this is an all-volunteer county).

Stonehouse Media Learning Platform

Rod Ammon, President, Stonehouse Media Incorporated
Cathy Corbitt-Dipierro, Writer-Producer, Stonehouse Media Incorporated

Rod Ammon introduced Stonehouse Media's online learning philosophy of providing a consistent, national network delivery system that supports what is already out there, puts the learning first, and uses a streamlined management system. He noted that customization of learning (pretesting is one tool to do this) is becoming increasingly important, content must be thoughtful and relevant, and the consistency achieved through use of an online program is a strong advantage in teaching key material like safety practices. Cathy Corbitt-Dipierro gave a demonstration to the group of the Fire Hero Learning Network (FHLN), which resides on the Stonehouse Media Learning Platform.

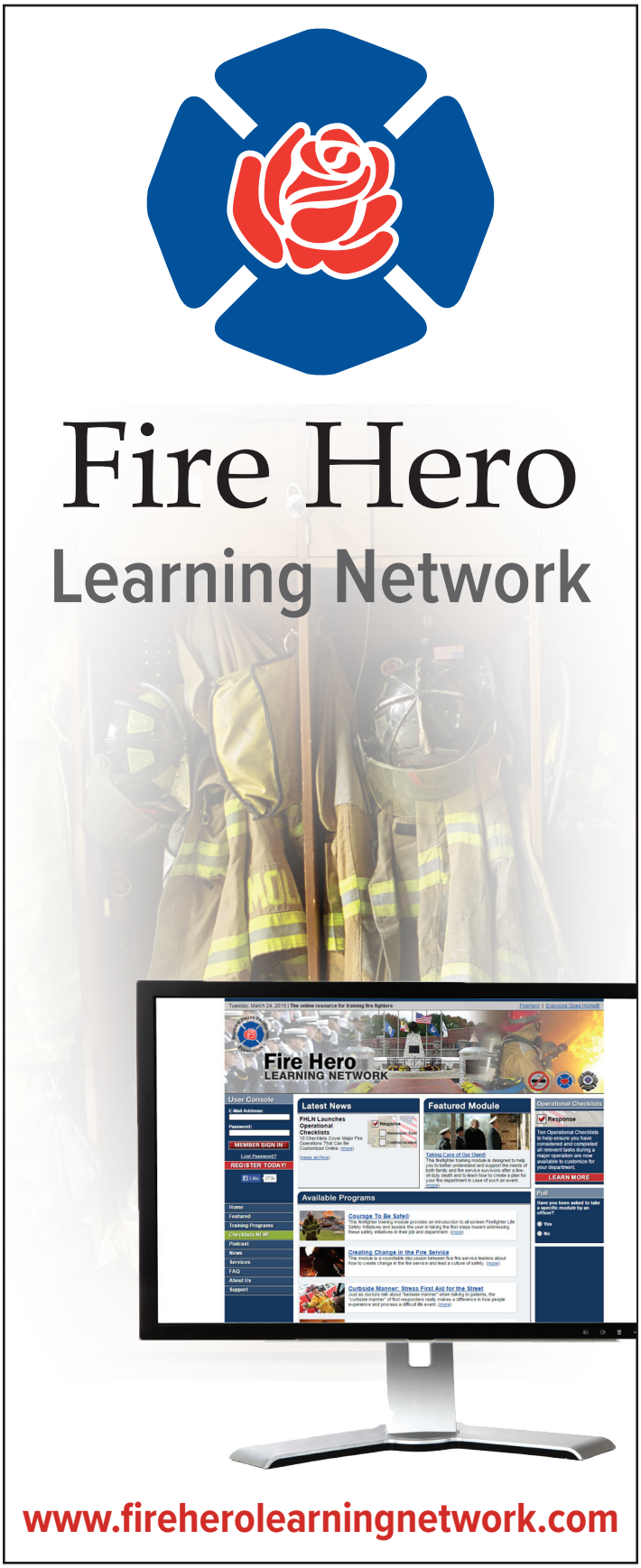
Resources currently available on the Fire Hero Learning Network include online learning modules covering critical firefighter health and safety practices, culture change in the fire service, and company officer development:

- Communication & Mentoring for Company Officers
- After Action Review
- Company Officer's Health & Safety Responsibilities
- Courage To Be Safe®
- Creating Change in the Fire Service
- Curbside Manner: Stress First Aid for the Street
- Leadership, Accountability, Culture, and Knowledge
- Stress First Aid for Fire and EMS Personnel
- Taking Care of Our Own®

Ms. Dipierro noted that FHLN tracks and reports user completion of these modules. A secondary reporting program is available that allows training institutions to view their members' module completion results, if the member permits their results to be released. FHLN also hosts 10 Operational Checklists that can be customized for a department. These help reduce the possibility of errors and ensure incidents run smoothly. Available checklists include:

- Building Collapse
- Confined Space
- Engine Company Operations
- Hazardous Materials
- High Angle
- Incident Command
- Safety
- Swift Water
- Trench Rescue
- Truck Company Operations

A sample of Fire Attack & Suppression Decision Making, a new training resource due to be released to the public in 2017, was shown to the attendees, who were interested in its potential application for their students' learning. The Responder Safety Learning Network (learning.respondersafety.com) was also shown to the group with an emphasis on the modules of particular interest to fire & EMS educators.



Discussion: The Role of Online Learning in Fire & EMS High School Programs and Academies

After the information sessions, the group turned its attention to the role of online learning in fire & EMS high school programs and academies. A series of questions guided the discussion, and can be found in Appendix C.

The consensus among participants was that online learning is clearly feasible and desirable for high school programs. The use of online trainings, such as those found on the Fire Hero Learning Network, can be sequenced in a number of ways. Each high school program will need to determine the sequencing that works best for them. Potential scenarios included: during Firefighter I after midterms, during practical exercises, or as part of the 16 Life Safety Initiatives unit then woven throughout Firefighter I.

Online learning may, at first, only be able to be assigned as supplemental, recommended, or extra credit lessons due to the difficulty of the process of integrating new required material into the curriculum, which is often mandated at the state and/or district level. There may be institutional roadblocks to the incorporating online learning at the high school level, but they are not insurmountable. Participants identified some potential impediments, including limited access to laptops, tablets, Wi-Fi, the Internet, and computer lab scheduling. Homework requirements and restrictions may also be in issue, in that the amount, type, and when it can/cannot be assigned may not be flexible.

There may also be curriculum constraints. Participants noted that it can be hard to get things into the curriculum and educators are often reluctant to push for additional content because there are already so many requirements for and constraints on their teaching. Attendees pointed out that the online learning does not have to be incorporated into the curriculum. It can be assigned in other ways, and in fact it can be an advantage to implementation to not go through the curriculum.

The workshop participants were eager for the integration of the 16 Firefighter Life Safety Initiatives into Firefighter I. They felt this was a critical step to fully addressing firefighter health and safety in high school fire & EMS programs because, despite the wide variety in program structures, most teach Firefighter I. This has already been done in the state of Wyoming, and Victor Stagnaro informed the group that Rick Mason, NFFF Training Coordinator, is currently working on developing a model for this integration in other jurisdictions.

Factors In Success

The workshop included a discussion about what factors the participants found to have led to the success of their fire & EMS high school programs and academies. Support and buy-in from stakeholders — students, parents, instructors, local departments, the school board, vocational program officials, and state, county, and local administrators—was perceived as particularly important, and critical to developing and sustaining a robust pro-

gram. Specific key factors in success identified by the group included the following:

Successful marketing of the program to all stakeholders. This often means: selling the idea first to the vocational tech school or district, and then to the state; finding a champion who can help move this forward; using case studies to sell the program; and highlighting that the program will provide a pathway for local students to become productive community members and potentially firefighters within the jurisdiction.

Coordination with the local fire training system. Being in concert with the local fire training system, whether state or local, provides a seamless transition from the high school program to future career or volunteer service.

Local fire department support. Partnering with local fire departments enhances the value of training, the student's experience, the community, and the future of the departments. However, some local fire departments may perceive the program to be developing new firefighters who have been trained in a different way and outside the existing system, and that this may upset the existing status quo. It is critical to reach out to local departments, bring them on board, and assure them that this program will raise everyone's level of professionalism and performance. Listening carefully and providing informed responses should help to alleviate their concerns.

School system support. Working in partnership with school administration often involves educating personnel about the fire service and the Fire/EMS program, as many traditional educators are not familiar with what the fire service is like or what is taught in this type of program. This can be an ongoing process as administrators turn over regularly. Programs will also need to work with and educate guidance counselors to enable them to promote the program to students. Staff will be required to coordinate with other student services, especially for students with IEPs.

Defining program standards, content, and processes in advance. Establishing competitive entrance requirements and strong program standards for student conduct and achievement up front raises the bar for student entry and achievement. The capacity to earn credentials and certifications provides important program milestones, and is popular with both students and instructors. It is also important to define a procedure for what happens when students fail a course or might fail out, or does not meet the standards for the program in another way.

Support for instructors. Teachers must have access to up-to-date scientific and research-based recommendations regarding firefighter health and safety practices. They should be encouraged to take advantage of online and print resources, including those to support and reinforce the teaching of the 16 Life Safety Initiatives. Instructors should also be provided with a mechanism for interacting and networking with peers from their own or other programs, and given the opportunity to share best practices, success stories, and concerns. Such a mechanism will also provide additional support for struggling programs.

Emerging Issues

Additional discussion among the workshop participants focused on roadblocks to developing a successful program. During the course of the conversation, the following recurring themes emerged.

The lack of basic, foundational statistics. Participants agreed that no one knows how many high school fire & EMS programs there are nationwide. Furthermore, there has been no comprehensive survey of the existing programs to understand their diversity and commonalities.

The lack of a national organization or association for high school-level fire & EMS programs and academies. Participants could not identify any national organization or association solely for high school fire & EMS programs/academies. A national organization would enable programs to network, share best practices and challenges, and learn from each other. It would also advance the profession by promoting training and education of the next generation of fire, rescue, and EMS professionals. This entity could champion needed reforms, initiatives, and national concerns, such as advocating for the integration of safety practices into high school fire & EMS curricula. Finally, a national organization could form partnerships and strategic alliances with content partners, sponsors/funders, and other fire service organizations to strengthen the education of up-and-coming fire & EMS professionals. Participants also felt that this white paper should be disseminated to high school fire & EMS programs, but were unsure how to best do that given that there is no national organization or association for these programs.

Some attendees were aware of national organizations whose work touches on fire & EMS education during the high school years. Skills USA runs a national competition for high school fire-fighting, but this competition is not well known among local fire departments and does not have any sponsors from within the fire service. FESHE (Fire and Emergency Services Higher Education) at the National Fire Academy tracks some high school-level programs and their data may be able to identify core courses. IAFF provides the opportunity to engage youth through the Explorer program, but their role is limited by regulations mandating that dues be spent on members and member priorities. James Ridley of the IAFF indicated that his group has some information on vocational technical school-based programs. Another member of the group mentioned that VCOS (Volunteer & Combination Officers Section of the International Association of Fire Chiefs) may also have some information on high school level programs in the United States. Finally, ACTE (Association for Career & Technical Education) may be able to pull the EMT and/or fire database to help identify programs. All of these organizations, as well as NVFC (National Volunteer Fire Council), are potential partners in a nationwide effort to identify and compile a national database of high school fire & EMS programs and academies.

Most high school fire & EMS academies are operating independently and with very little connection to others doing the same work. There is a general lack of knowledge about of the diversity of programs that are out there, who is doing this work, and what they are doing. Workshop participants indicated that their programs were eager

to learn from each other, yet felt there were few mechanisms for them to do so.

Instructor training is needed. It was also pointed out that training is needed in many areas so instructors at the high school level can help all students succeed. This instructor training needs to address facility with technology, culture changes in the fire service in recent years, firefighter health and safety practices, and teaching methods. We focus quite a bit on the needs of learners, but we need to equally address the needs of the instructors who are expected to teach these learners and who may, in many cases, be lacking the training, tools, and support they need. How we teach, what we teach our teachers, and what our teachers teach are all equally important.

Health and safety training is necessary for the next generation of firefighters and the content differs significantly from what many instructors were previously taught. The culture of the fire service continues to change to a more safety-focused mindset and science-based research is revolutionizing our concept of firefighting. Many instructors were not taught about safety or about "new science" firefighting when they were being trained, yet they are expected to teach this to their students. In addition, hazardous duties like traffic control, often are assigned to younger and less experienced firefighters, so from Day 1 new firefighters must be trained in how to safely execute these duties. Instructors need training in current health and safety practices, as well as the research that informs those practices. More research is always needed to determine best practices, and to provide the data to support changes in training.

This age group learns through hands-on experiences and online learning methods. Consensus based on the group's experience, is that this student population learns best through hands-on experiences and online training. Some workshop participants felt that online learning should ideally be integrated into all programs, and that there should be interconnectivity between state training sites and national-level training providers like FHLN. Tracking student outcomes in this training gives instructors a way to monitor their progress and completion.

Instructors need "go bys" to show them how to integrate online learning and health and safety training into what they are already doing. There is no existing road map for how to deliver health and safety training within the context of the high school fire & EMS program. Participants felt this was desperately needed, and would pave the way for widespread acceptance and teaching of this health and safety content to high school students enrolled in fire & EMS programs. The group agreed that integration of health and safety training and the 16 Firefighter Life Safety Initiatives within the framework of Firefighter I was an excellent way to accomplish this goal, because nearly every high school program uses Firefighter I.

Recruitment and retention of diverse candidates for high school fire & EMS programs is critical for many administrators. Diversity in recruitment for high school programs (as well as for fire departments) is being increasingly emphasized. There is a need to understand directly from the students what attracts them to the program, and use this information to develop ways to attract and retain diverse, quality applicants.

Reputation management and social media are increasingly becoming concerns for fire & EMS departments. Addressing reputation management and social media usage beginning at the high school level will help ingrain good practices and strong morals in the next generation of firefighters.

Conclusion

This white paper has summarized the proceedings of the October 25-26, 2016 NFFF High School Technical Curriculum Online Workshop, including presentations, discussion of the role of online learning in high school fire & EMS programs and academies, factors in the success of those programs and academies, and emerging issues facing these programs. The key points identified for future study and action are more fully developed in the recommendations in the following section. Overall, there are significant opportunities to help current high school fire & EMS programs and academies to excel and grow the number of these programs and academies across the nation. Developing a mechanism to link programs, administrators, and instructors coupled with national leadership on developing the fire & EMS academy model and raising the profile of online training opportunities for these students will improve the health and safety training of the next generation of firefighters and EMS personnel.

Recommendations

1. **Undertake a national survey of fire & EMS programs and academies in U.S. high schools.** The National Fallen Firefighters Foundation should work with national organizations, thought leaders, EGH state advocates, and experienced fire and EMS instructors at the high school level to identify existing programs. A comprehensive survey of these programs would identify salient characteristics, keys to success, and challenges. Contact information could be compiled into a national database. Outcome of the survey would be a national profile of fire and EMS programs and academies in U.S. high schools, as well as a white paper summarizing the common characteristics of successful programs/academies.

2. **Explore the creation of a national organization for high school fire & EMS programs and academies.** A national organization would provide many opportunities to improve the practice of training firefighters and EMTs at the high school level. These include networking, best practices research, gathering of data, publicity and outreach, instructor-to-instructor information exchange, advocacy, employment opportunities, toolkits, go by's and model documents (applications, curricula, marketing materials, agreements, MOUs), and technical assistance to programs/academies facing challenges.

3. **Develop a correlation between Firefighter I, the 16 Firefighter Life Safety Initiatives, and available resources to teach high school students about the FLSIs and their underlying health and safety topics.** This correlation will allow almost any high school fire and EMS program, no matter what its structure, to more easily integrate health and safety training into its existing curricula via Firefighter I.

4. **Engage labor in the effort to properly prepare the next generation of firefighters beginning at the high school level.** Open a conversation with the IAFF and its affiliates about how labor can be involved. Labor will have the opportunity to provide input into these high school programs, grow their member base, and strengthen support of local affiliates and local programs. High school programs will benefit from labor's member base in person power, expertise, networking, and brother and sisterhood.

5. **Develop online training programs on the FHLN to address firefighter health and safety issues not covered by current offerings.** Topics suggested by the group included the safety aspects of apparatus in motion (seatbelt use, speed control, backup protocols), cancer prevention and early detection, cardiac fitness, yearly physicals and screenings, and nutrition.

6. **Create materials and conduct outreach to local departments and school districts to explain the fire & EMS high school academy concept, the diversity of approaches, and how to get started.** Outreach materials could include: a video that explains these programs, their goals and benefits (job-ready graduates, community leader development, career and volunteer service pipeline, retention), and ex-

amples of successful programs; a toolkit of materials to start the local conversation about creating a high school program or academy in fire and EMS; and brief case profiles of successful programs, students, and instructors.

7. **Create mechanisms for fire and EMS administrators and instructors working with high school students to network, exchange knowledge, seek assistance with challenges, and learn best practices.** These mechanisms could take many forms and could be done through a national organization or in another way. These could potentially include podcasts, online discussion groups, a conference (physical and/or virtual), white papers, local meetings, online expert chats, and mentorships.

8. **Explore how online learning platforms from national organizations and state training systems can be linked as seamlessly as possible to allow students to access health and safety training modules easily and comprehensively.** Enable instructors to track student learning. Enable state systems to register "credit" for training taken from national organizations' online training networks.

Appendix A: 16 Firefighter Life Safety Initiatives

1. Define and advocate the need for a cultural change within the fire service relating to safety; incorporating leadership, management, supervision, accountability and personal responsibility.
2. Enhance the personal and organizational accountability for health and safety throughout the fire service.
3. Focus greater attention on the integration of risk management with incident management at all levels, including strategic, tactical and planning responsibilities.
4. All firefighters must be empowered to stop unsafe practices.
5. Develop and implement national standards for training, qualifications, and certification (including regular recertification) that are equally applicable to all firefighters based on the duties they are expected to perform.
6. Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.
7. Create a national research agenda and data collection system that relates to the initiatives.
8. Utilize available technology wherever it can produce higher levels of health and safety.
9. Thoroughly investigate all firefighter fatalities, injuries and near misses.
10. Grant programs should support the implementation of safe practices and/or mandate safe practices as an eligibility requirement.
11. National standards for emergency response policies and procedures should be developed and championed.
12. National protocols for response to violent incidents should be developed and championed.
13. Firefighters and their families must have access to counseling and psychological support.
14. Public education must receive more resources and be championed as a critical fire and life safety program.
15. Advocacy must be strengthened for the enforcement of codes and the installation of home fire sprinklers.
16. Safety must be a primary consideration in the design of apparatus and equipment.

Appendix B: Workshop Attendees

Rod Ammon	Stonehouse Media Incorporated
Steve Austin	International Association of Arson Investigators
	National Fallen Firefighters Foundation's Everyone Goes Home® program
Mark Barto	Octorara (PA) School District
Larry Baughman	Firemen's Association-State of Pennsylvania
Richard Best	National Fallen Firefighters Foundation's Everyone Goes Home® program
Burton Clark	U.S. Fire Administration, (Retired)
Kevin Cooney	South Windsor (CT) Fire Department
Cathleen Corbitt-Dipierro	Stonehouse Media Incorporated
Jamie Drawbaugh	Washington County (MD) High School Fire & Rescue Academy
Steve Edwards	Maryland Fire and Rescue Institute
John Gillespie	Chester County Department of Public Safety
Buddy Hyde	Southside Virginia Community College
Mitchell Kijak	Norristown (PA) Fire Department
David Lewis	Maryland State Firemen's Association
Ginger Manifold	Calvert County (MD) Fire Rescue EMS
Candice McDonald	Sebring (OH) Fire Department
Lawrence Preston	Maryland Fire and Rescue Institute
James Ridley	International Association of Fire Fighters
Alan Robinson	Delaware State Fire Prevention Commission
Tricia Sanborn	National Fallen Firefighters Foundation
Victor Stagnaro	National Fallen Firefighters Foundation
Bruce Trego	Pennsylvania State Fire Academy

Appendix C: Online Learning Discussion Guiding Questions

1. Is this project feasible from what we know about these programs?
2. What are any institutional roadblocks, if any, for including our material in these programs?
3. Owing to the amount of material that has to be covered in the vocational and academic portions of the school day, what are reasonable expectations for inclusion of the Firefighter Life Safety Initiatives in direct delivery? Online learning?
4. How does the amount of required learning in the academic portion of the curriculum impact adding new material?
5. How would any online training, especially ours, be viewed by school administrators? How do they evaluate online courses?
6. Do the existing modules in the Fire Hero Learning Network and the Responder Safety Learning Network provide the right material for high school students in relation to teaching a culture of safety?
7. Are there other programs (such as the Seat Belt pledge) that are not online that need to be included? Should consideration be given to getting those programs online?
8. To whom should the White Paper be directed? What is our best audience for dissemination and acceptance?
9. Any other concerns?

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Our mission is to honor and remember America's fallen fire heroes, to provide resources to assist their survivors in rebuilding their lives, and to reduce firefighter deaths and injuries.