

Development of Emergency Responder SOPs/SOGs Using Crowdsourcing to Address Electric Vehicle Fires

Prepared by:

Ellie Burgess
Custos Fratrisc L3C, Tucson AZ

Fire Protection Research Foundation
© July 2014



THE
FIRE PROTECTION
RESEARCH FOUNDATION

The Fire Protection Research Foundation
One Batterymarch Park
Quincy, Massachusetts, U.S.A. 02169-7471
E-Mail: foundation@nfpa.org
Web: www.nfpa.org/foundation

(This page left intentionally blank)

FOREWORD

The fire service and other emergency responders serve an important societal role by saving lives, reducing injuries and minimizing the adverse impact from unwanted fire and other emergency events.

The duties of emergency responders are numerous and they commonly utilize Standard Operating Procedures and Standard Operating Guidelines (SOPs/SOGs) to fulfill their mission. SOPs/SOGs are typically prescriptive documents that are not uniform and are customized between emergency response organizations. For example, in the United States there are more than 31,000 individual fire departments, and each is likely to use dozens of different SOPs/SOGs addressing numerous tasks. These ultimately represent best practice for a particular emergency response organization, and are used to facilitate training, support operational guidance, and to interpret policy during post event assessment.

A new information development tool that is becoming recognized in recent years is “crowdsourcing,” and it offers intriguing potential benefits for the development of SOPs/SOGs. The transparent communication tools of today’s internet age have strongly enabled the concept of crowdsourcing. It offers a novel approach to synthesize and coordinate information on a common technical topic based on broad and on-going input from directly impacted stakeholders. This project focuses on the use of crowdsourcing techniques to develop and refine SOPs/SOGs for the fire service, with a prototype focus on addressing fires involving electric & hybrid vehicles. The goal of this project is to investigate the virtues of a novel approach for generating SOPs/SOGs for the fire service.

The Fire Protection Research Foundation expresses gratitude to members of the project’s technical panel for their guidance throughout the project and to all others who contributed to this research effort. Special thanks are expressed to the Alliance of Automobile Manufacturers (AAM) for providing the funding for this project, which is also related to an earlier project to address the emergency responder concerns for electric vehicle battery hazards.

The content, opinions, and conclusions contained in this report are solely those of the authors.

ACKNOWLEDGEMENTS

The Fire Protection Research Foundation expresses gratitude to those that assisted with the development and review of the information contained in this report. The Research Foundation appreciates the guidance provide by the Project Technical Panel, and from the Alliance of Automobile Manufacturers who provided funding.

About the Fire Protection Research Foundation

The [Fire Protection Research Foundation](#) plans, manages, and communicates research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.

About the National Fire Protection Association (NFPA)

NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess.

Keywords: emergency responders, fire, fire service, fire fighting, standard operating procedures, standard operating guidelines, SOPs, SOGs, electric vehicle batteries, lithium-ion batteries

PROJECT TECHNICAL PANEL

Daniel Bates, New York State Police (NY)
Maria Bianchi, American Ambulance Association (VA)
Jim Carroll, NAFTD, Fire Academy, (CT)
Laura Cathcart, NAEMT, (MD)
Frank Cheatham, NASEMSO, (VA)
Gregg Cleveland, NFPA Fire Service Section, La Crosse Fire Dept. (WI)
Doug Cline, International Society of Fire Service Instructors, Horry County Fire/Rescue, (SC)
Don Cooper, NFPA 1670 TC Chair, SFM (OH)
John Cunningham, NAFTD, Nova Scotia Firefighter's (Canada)
Karen Deppa, NASFM, (DC)
Rich Duffy, Alexandria (VA)
Jason Emery; Emergency Training Solutions, (CT)
Gregory Frederick, NFPA/IAFC Metro Chiefs, (KY)
Bill Giorgis, Michigan Towing Association, (MI)
Stéphan Lepouriel, Civil Security and Crisis Management (France)
Terry McDonnell, New York State Police, (NY)
Ron McGraw, IAFF, (DC)
Larry McKenna, USFA, (MD)
Jim Narva, NASFM, (DC)
Steve Pegram, IAFC & ISFSI, Goshen Township Fire & EMS, (OH)
Tony Sanfilippo, IFMA, Michigan Bureau of Fire Services (MI)
Ken Willette; NFPA, (MA)

PROJECT SPONSOR

Alliance of Automobile Manufacturers



AUTO ALLIANCE
DRIVING INNOVATION®

(This page left intentionally blank)

**“Firecrowd: Online Peer Production
of Firefighter Health and Safety”**

For the project to

Develop Emergency Responder SOPs/SOGs

Using Crowdsourcing to Address Electric Vehicle Fires

Prepared by:

Ellie Burgess

Custos Fratrisc L3C, Tucson AZ

July 2014

Table of Contents

Introduction	Pages 9 - 11
Theoretical Underpinnings	Pages 11 - 12
Adaptations	Page 12 - 13
User Experience	Pages 13 - 23
Site Usability and Potential Improvements	Pages 23 - 25
Administration	Page 25 - 26
Conclusion	Page 27
Resources	Page 28

Introduction

As defined by the NFPA, a Standard Operating Procedure (SOP) is “an organizational directive that establishes a standard course of action” (NFPA 1710). Emergency responders commonly utilize SOPs and Standard Operating Guidelines (SOGs) to provide consistency in strategies and tactics for operations. SOPs and SOGs generally do not provide task level information nor indications of health and safety risks, although it is generally believed that implementation of SOPs/SOGs improves firefighter safety. For the purpose of this report, the term SOP will be used to represent both SOPs and SOGs.

Other than some extent of regional standardization, there is no standard SOP format. However, there are recommendations for development of SOPs (USFA, 1999) and integration (Figure 1) within fire department health and safety systems (Duncan et al., 2014). The latter study also recommended inclusion of an “awareness column” within SOPs to help firefighters identify and address significant hazards. Creation of a more uniform SOP format would facilitate sharing of best operational practices among fire departments.

Online peer production offers a novel approach to synthesis and coordinated information on a common technical topic (such as SOPs) based on broad and on-going input from directly impacted stakeholders, in this case the firefighters and health and safety personnel. The Firecrowd project focuses on the use of online peer production techniques to develop and refine SOPs on a national scale for the fire service. Other websites also provide SOP information, but none of them have identified peer production as a main goal. These alternate sites include a website called FireSOPs.com that maintains a database of current SOPs from many departments in several states, and FirefighterCloseCalls.com that gives out

information to enhance pertinent Standard Operating Guidelines.

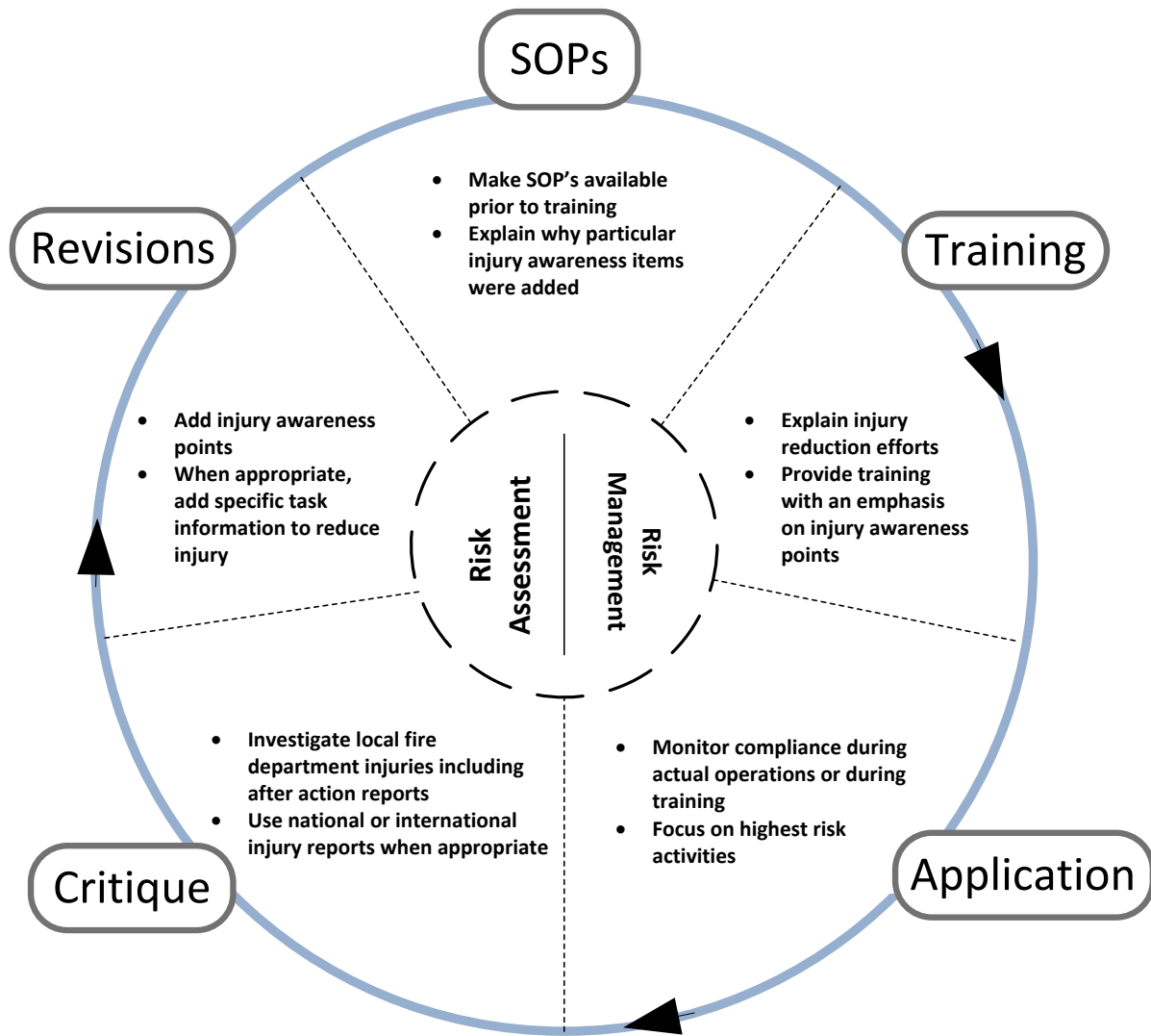


Figure 1: SOG integration into risk management systems (Duncan et al., 2013)

Firecrowd is a Drupal-based website found at the web address firecrowd.com. Drupal uses a Content Managing System (CMS) that allows administrators to make site changes using a text-based editor instead of editing raw code. This makes the site accessible for administrators

who are not experts in programming, because it allows administrators as well as users to make changes easily without prerequisite programming knowledge. The goal of Firecrowd is to create, using a crowdsourcing process, an overall guideline that can be used as an SOP template by any fire department in the United States. This document will be vetted through many contributions and reviews from firefighters and firefighter health and safety personnel.

To pilot development of Firecrowd, an initial SOP has been developed to address firefighter response to hybrid and electric vehicles (referred to as xEV SOP). Electric vehicle technology demands unique actions from responders, and features continuous development of new technologies and components. For example, some vehicles have two battery packs that are placed in different areas of the vehicle. The Firecrowd xEV SOP will be constantly updated to match the rapid speed of technological advance and resulting new fire fighting operations. This allows Firecrowd to become the go-to place for up-to-date information as new car technologies change the most effective methods for fire fighter response.

Theoretical Underpinnings

The Firecrowd website focuses on “commons-based peer production,” coined by Harvard Law School professor and faculty co-director of the Berkman Center for Internet & Society, Yochai Benkler. The site uses the combined knowledge of the fire fighter community to create and continually refine information in the form of SOPs. In his book, *The Wealth of Networks* (2006), Benkler speaks to the possibilities of the information economy age that we live in, where “technology creates feasible spaces for social practice.” Firecrowd creates a space for fire fighters nationwide to share their experiences, creating common knowledge

relevant to all members. Individuals from all over the United States are brought together to create a social good for all users – a best practice SOP. SOPs are widely used by emergency responders and there is a strong need to further address them, as indicated by numerous references to the use of SOPs in key guidance documents, like model standards such as NFPA 1500, *Standard on Fire Department Occupational Safety & Health Program*.

There are some potential problems of such a diverse online community, but Firecrowd has been designed to accommodate these issues. First, the size of fire departments varies widely across the US, and there are major differences between the fire fighting methods used by metropolitan firefighters and rural firefighters. There are also very specific, special mechanisms that are in place for some fire stations and not others even in a relatively close geographical area. Therefore, Firecrowd SOPs are written as general overarching procedures or templates to be further specified by the individual fire departments. Using the site's Microsoft Word download capability, each department can print off SOP documents and use them as a base from which they can build SOPs applicable to needs of their departments.

The editable SOPs in Progress, known as Firecrowd wikis, incorporate the benefits of community curation and individual change-making abilities by capitalizing on the methods that Wikipedia employs to build the worldwide online encyclopedia. SOPs are regularly updated, which allows them to stay accurate in a world of constantly changing technologies; the use of wikis greatly facilitates this process. In addition, a key feature of Firecrowd SOPs is the inclusion of awareness points. Awareness points are highlighted information sections within the SOP document that function to draw attention to important health and safety information.

Adaptations

Initially, the xEV SOP was vetted by Waterbury Fire Department Captain and NFPA training consultant Jason Emery. The base text was secured from a recent NFPA study: “Emergency Response to Incident Involving Electric Vehicle Battery Hazards,” a project studying the safety hazards of Electric Vehicle fires. This is the site’s first SOP, and more SOPs will be added in the future by users collaboratively developing SOPs on the website.

Based on feedback from the FPRF Emergency Responder Advisory Panel, the Firecrowd home page now includes “About Us” information under the “Creating best practice SOPs” header, as well as a brief response to the SOP vs. SOG debate in the “SOPs vs. SOGs” section. The option to download SOPs as a Microsoft Word files has also been added. User testing feedback has recently prompted changing the names of the site sections from “Wikis” and “Create a Wiki” to “SOPs in Progress” and “Create an SOP.” The Firecrowd site is currently in small-scale testing, so the site will continue to be iterated to achieve maximum usability.

User Experience

Firecrowd has specific flow and functionality to optimize use for its two main purposes, to: 1) Peer produce SOPs and 2) Provide downloadable SOPs. The landing page of Firecrowd is shown in Figure 2.

Firecrowd: SOP & SOG Crowdsourcing
FIREFIGHTER SOP

Welcome About Us SOPs Wikis Resources Log In


Welcome

This is Firecrowd - home to the first crowdsourced Standard Operating Procedures (SOPs) for fire fighters. Our goal is to use peer production to create a **best practice** SOP database.

1. [View the SOPs](#) to see vetted versions of the SOPs, and click on the numbered sections to see comments from others and to join in on discussions.
2. Check out [the Wikis](#) and edit the document text in real time.
3. Look through the [Resources](#) and [About](#) pages to learn more about current fire fighter news and research.

Creating best practice SOPs

Emergency responders commonly utilize SOPs and SOGs as documents that ultimately represent the **best practice solutions** for emergency response organizations. The documents are used to facilitate **training**, support **operation guidance**, and to interpret **policy** during post event assessment.




Currently there is not a standard SOP that is uniform across the fire departments in the United States. Instead, they are customized for each emergency response organization. For example, in the United States there are more than 31,000 individual fire departments, and each is likely to use dozens of different SOPs and SOGs addressing numerous tasks.

Fire fighter SOPs play extremely important roles in our society, such as saving lives, reducing injuries, and minimizing the adverse impact from unwanted fire and other emergency events. Fire fighter SOPs also support other goals such as protecting property, minimizing business interruption, supporting mission continuity, and protecting the environment.

The Fire Protection Research Foundation (FPRF) has recently become interested in crowdsourcing and peer production, especially the intriguing potential benefits for the online development of SOPs/SOGs. Online peer production offers a novel approach to synthesis and coordinated information on a common technical topic (the individual SOP) based on broad and on-going input from directly impacted stakeholders, in this case the fire fighter community and health and safety personnel. The Firecrowd project focuses on the use of online peer production techniques to develop and refine SOPs/SOGs on a national scale for the fire service.

SOPs vs. SOGs



An issue sometimes arises within fire service organizations about whether to use the terminology "standard operating procedures" (SOPs) or "standard operating guidelines" (SOGs). Some experts feel that the term "procedures" implies relatively inflexible task steps or instructions, while "guidelines" implies more discretion in performing the job. Since emergency incidents are unpredictable and flexibility is essential, these experts advise fire departments to develop SOGs, thereby reducing the need to identify exceptions, and perhaps even limiting liability due to actions by personnel. Other experts believe the opposite is true: the term "guidelines" implies too much flexibility and discretion, thus reducing control and increasing the likelihood of mistakes.

A review of related legal proceedings indicates that terminology is less important than content and implementation of SOPs/SOGs. Courts tend to assess liability based on factors such as:

- Systems in place to develop and maintain SOPs/SOGs
- Compatibility with regulatory requirements and national standards
- Consideration of unique departmental needs
- Adequacy of training and demonstration of competence
- Procedures used to monitor performance and ensure compliance

For convenience, the traditional terminology "standard operating procedures" is used throughout this website. Other alternatives—including General Orders, Departmental Orders, or Executive Orders, to name a few—may be equally appropriate. Fire service organizations should consult with legal counsel and use the terminology that best reflects their unique needs. Regardless of the term used for these policies and procedures, it is important to note that judgement and discretion must be used on all incidents.

Figure 2: Firecrowd Landing Page (3 images)

On the home page, users are first presented with links to the key parts of the site: the SOPs, the Wikis (now changed to SOPs in Progress), and Resources. Further down, the page states the purpose of the site, and briefly answers the SOP vs. SOG debate. Users are not expected to read through the entire landing page, but the information is there if users would like to learn more. Aside from the initial landing page instructions, Firecrowd does not have an entity telling people what they have to do; part of the idea is that they can explore the site and comment and interact wherever they would like. However, the home page is designed so that most users are immediately drawn to the links at the top. This jump-starts the site peer production functions.

Site visitors do not need to log in initially, but before they can access many of the site functions, they need to log in. The Log In tab is the furthest to the right of the navigation bar. Once on the Log In page, new users should click the “Create new account” tab, while return users can simply log in. New users have to provide an email address. When the new user fills out their information and hits submit, Firecrowd sends them an email. New users must go to their email and click the verification link to be redirected back to the site. They are then prompted to create a password to complete the log in process, and then they are ready to engage with Firecrowd.

If a user wants to download a vetted SOP from Firecrowd, it is simple to navigate to the list of completed SOPs by using the link on the landing page, or the horizontal navigation bar. From there they can select a SOP from the list, such as “Responding to Incidents Involving Hybrid and Electric Vehicles Standard Operating Procedure” (Hybrid and Electric vehicles are referred to as xEV in the SOP), shown in Figure 3.

Responding to Incidents Involving Hybrid and Electric Vehicles Standard Operating Procedure

This procedure identifies operational tactics for safe handling of electric drive vehicle (EDV) fires.

Jump to [Purpose](#), [Scope](#), [Definitions](#), or [Procedures](#)

Anytown Fire Department

SOP: EO-001	Title: Responding to Incidents Involving Hybrid and Electric Vehicles
Date:	Latest Update: February 16, 2014

Purpose: To provide all department personnel with operational guidance when responding to incidents involving electric and hybrid vehicles.

Scope: This procedure is to be adhered to by all department members responding to emergency incidents involving hybrid and electric vehicles. This SOP addresses standard vehicle disabling techniques as well as handling crashes, extractions, fires and submersions. It is

Figure 3: xEV SOP Document Header

The document, as will all subsequent SOPs on the site, uses a common format of Purpose, Scope, Definitions, and Procedures. The centered labeling box at the very top is repeated in the *Create an SOP* templates to allow for easy categorization. Figure 4 below shows the Awareness Point section, used throughout the SOP body text to bring attention to the important health and safety information.

3) Disable

Shutting down the vehicle's drive system renders it unable to move under power and contains high voltage current to the battery itself. Most vehicle shutdown procedures recommend one of the following methods, in the order given. However, always consult the NFPA EFG or manufacturer's ERGs for vehicle specific instructions. In each method, **BOTH** steps must be accomplished to fully disable the vehicle and its occupant protection systems.

a) Method #1 (Ignition accessible)

- (1) If vehicle is on remove key from ignition or use power button to shut it down. Maintain control of the key or power button until the 12v battery is disconnected to prevent accidental starting of the vehicle.
- (2) Disconnect the 12V battery

Awareness Point

Several manufacturers whose vehicles are outfitted with proximity keys recommend removing the key from the vehicle at a distance of 16 feet to disable the system. This key may be in a difficult to access location and consideration must be given to the potential of more than one key being in the vehicle. The most operationally effective method of disabling the proximity key system is to disconnect the 12v battery once the vehicle is shut down.

b) Method #2 (Ignition not accessible)




- (1) Disconnect 12v battery
- (2) Pull the high-voltage system control fuse typically found in the engine compartment fuse block. (Consult EFG or ERG for location)

Figure 4: xEV SOP Procedures section with Awareness Point


Figure 5 shows the various download and print options available to quickly use Firecrowd SOPs.

E. Vehicle Submersion


Remove vehicle from water and use standard disabling techniques. The high-voltage system is isolated from the vehicle chassis so there is no risk of electric shock from touching the car's body or framework in or out of the water. Do not touch high-voltage components or cables directly. Do not remove the high voltage disconnect while vehicle is in the water. Consult the NFPA EFG or manufacturer's ERGs for additional information on handling submerged vehicles.

[MS Word version](#)
 [Printer-friendly version](#)
 [PDF version](#)



Sponsored by Custos Fratrīs



Sponsored by the Fire Protection Research Foundation

Powered by [Drupal](#)
 A Commons Community, powered by [Acquia](#)
[Log In](#)

© 2013 [FireCrowd.com](#)

Figure 5: xEV SOP Document text – Download and Print capabilities

As mentioned previously, the SOP is not all-inclusive, but it provides the most necessary

information in a concise format. SOPs are naturally oriented to specific activities or operations; therefore the Firecrowd SOPs function in a step-by-step format for the plan of attack, while highlighting the important safety information. To maintain quality in the SOP, only administrators can change the finalized text. Periodically, administrators will review changes to the editable versions of the SOP, and then will change the corresponding vetted SOP if necessary (see Administration section for more detail).

The ability to continually update the SOPs and the source of the site peer production is found in the Wikis (now SOPs in Progress) section. The wiki section allows users to make real-time edits, empowering the user to understand that their contributions are useful, and that individual changes are essential to create a best practice SOP. The Hybrid and Electric Vehicles SOP in Progress has the same format as the SOP, but the three tabs at the top of the page are different (see Figure 6).



Responding to Incidents Involving Hybrid and Electric Vehicles Wiki

[View](#) [Edit](#) [Revisions](#)

Anytown Fire Department

SOP: EO-001	Title: Responding to Incidents Involving Hybrid and Electric Vehicles
Date:	Latest Update:

Figure 6: xEV Wiki page

When the edit tab is selected, then the CMS text editor appears as shown in Figure 7.

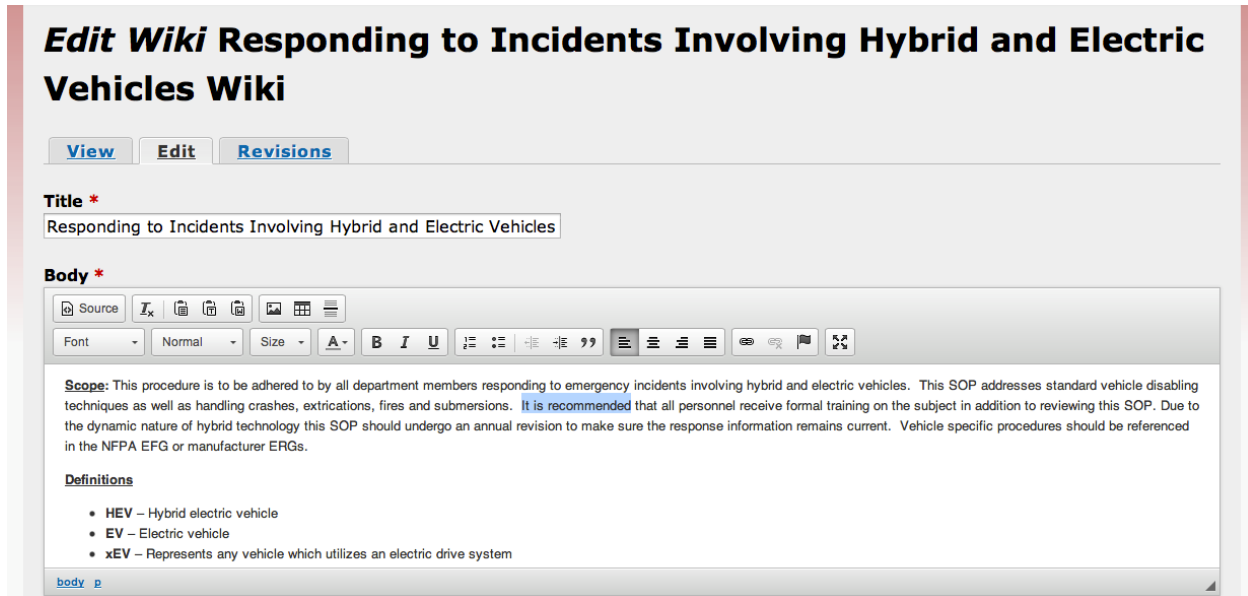


Figure 7: xEV Wiki Edit page

Users can edit the wiki SOP document text like a word document. They can add lines, change wording, create links, include tables; the variety of options is endless. When the user is done editing the document, there is a prompt above the save button asking what changes have been made. It is not necessary for the user to note what they have changed, but as evidenced by Wikipedia, most people include a reason for their edit. If a user wants to see exactly what has been changed between versions, they click on the final tab at the top of the wiki page, titled "Revisions." This page functions similarly to the Revisions History page on Wikipedia. Users can compare changes in two different saved SOPs, such as the last two versions that are selected in Figure 8 below. Clicking the Compare button directs the page where the changes between the versions are marked in red.

Revisions for *Responding to Incidents Involving Hybrid and Electric Vehicles Wiki*

[View](#) [Edit](#) [Revisions](#)

Revisions allow you to track differences between multiple versions of your content, and revert back to older versions.

Revision	Compare	Operations
Fri, 03/07/2014 - 07:26 by rbailey.us	<input checked="" type="radio"/>	current revision
Triple checking that revisions are working right. No changes were made.		
Wed, 02/19/2014 - 08:57 by cgrant	<input type="radio"/>	Revert Delete
Tue, 02/18/2014 - 00:00 by Administrator	<input type="radio"/>	Revert Delete
Sun, 02/16/2014 - 10:56 by Administrator	<input type="radio"/>	Revert Delete

Added Battery Breach information

Figure 8: xEV Wiki Revisions page

Back in the SOP in Progress View tab, users can click on links in the document headers that take them to a step-specific comment page for debates and comments about step minutia. These blue-colored links are embedded into each major step of the SOP, and there is a specific comment section at the bottom of the page (see Figure 9). The purpose of the comment pages is to facilitate interaction between fire fighters who use different procedures. Users can ask questions, explain different methods of implementation, and more. This feature should also prevent back-and-forth edit wars on the wiki.

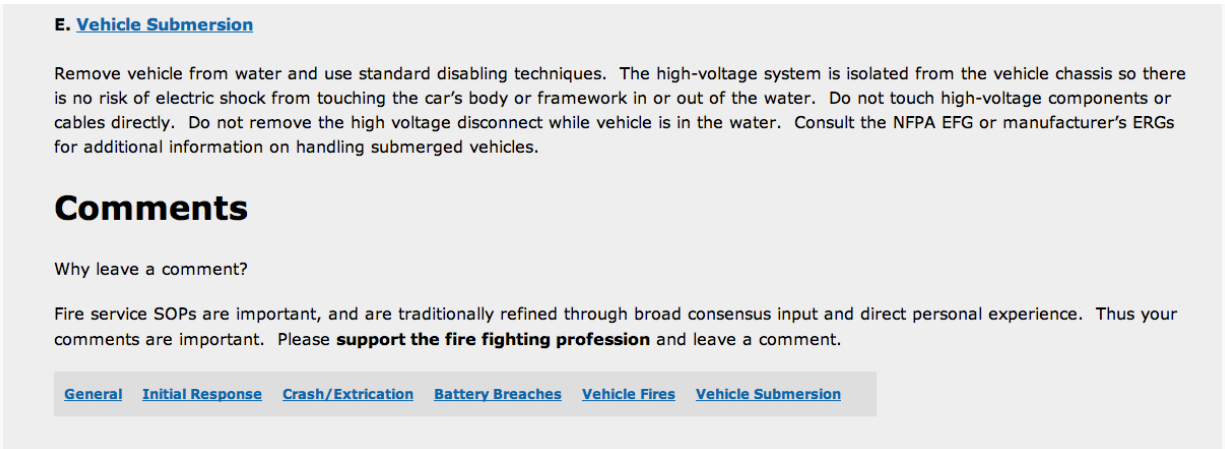


Figure 9: xEV Wiki View page Comment section

If a user selects the “General” link in Figure 9, it will direct to the comment page specific for that wiki. This comment page is shown in Figure 10.

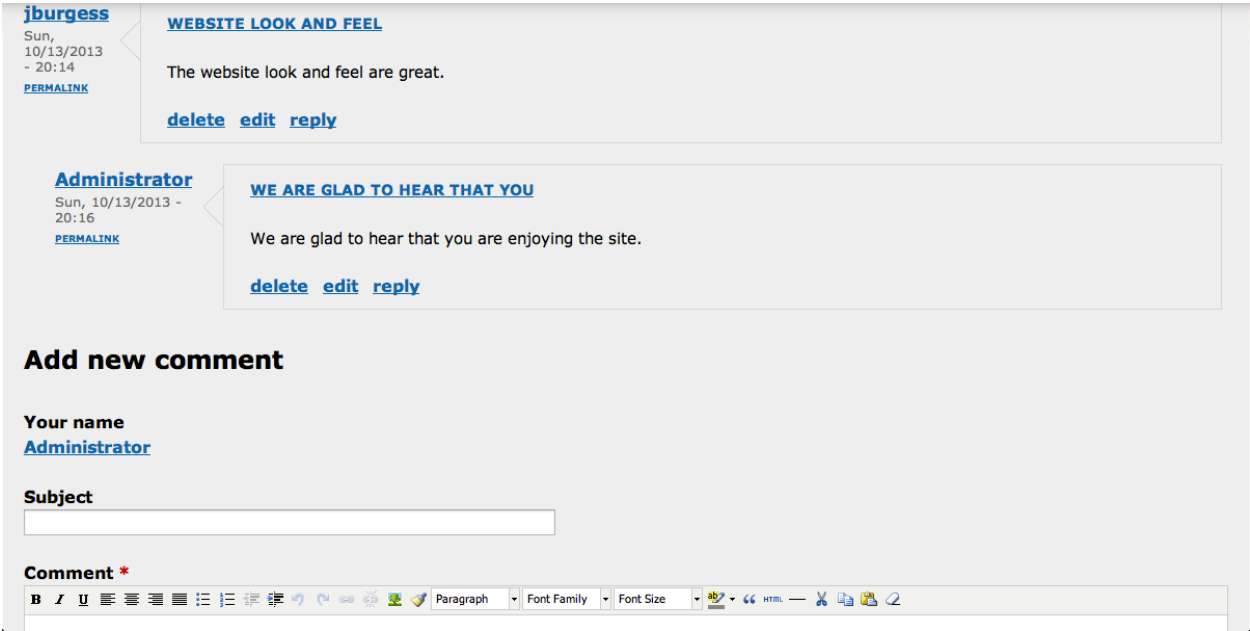


Figure 10: xEV SOP in Progress General Comment Page

On the comment page, site users can contribute to a current discussion by replying to

another contributor’s post, as the Administrator did in Figure 10, or they can create a new topic of conversation by starting a new comment thread. Through user interaction on these comment threads, Firecrowd will build community. For another level of interaction in addition to user comments, the site administrators can comment to keep discussions alive and provide feedback. Overall, the commenting method will allow users to comment on the minutia of the wording or debate various approach mechanisms, and these comment threads will become a place for polishing the words and theories of the SOP.

Firecrowd’s community-building and information pages are the About Us page and the Resources page. The About Us page, shown in Figure 11, gives contact information for site queries, and provides more background about the Firecrowd project.

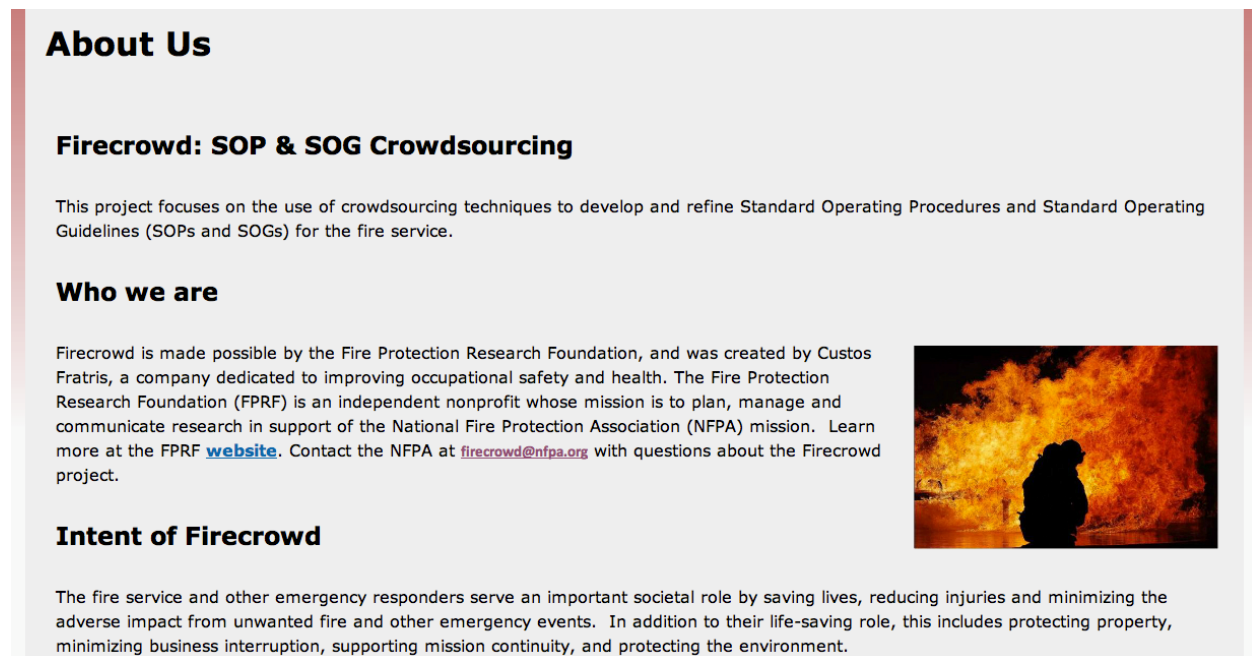


Figure 11: About Us page

The last main site page is the Resources page. This area provides links to similar sites in

the SOP creation community, and also serves as a place to put relevant information. For example, supplemental information gathered for the xEV SOP was placed in a separate page of the resources section (see Figure 12). At this point, the resources pages are static, and only administrators can add new pages of information.

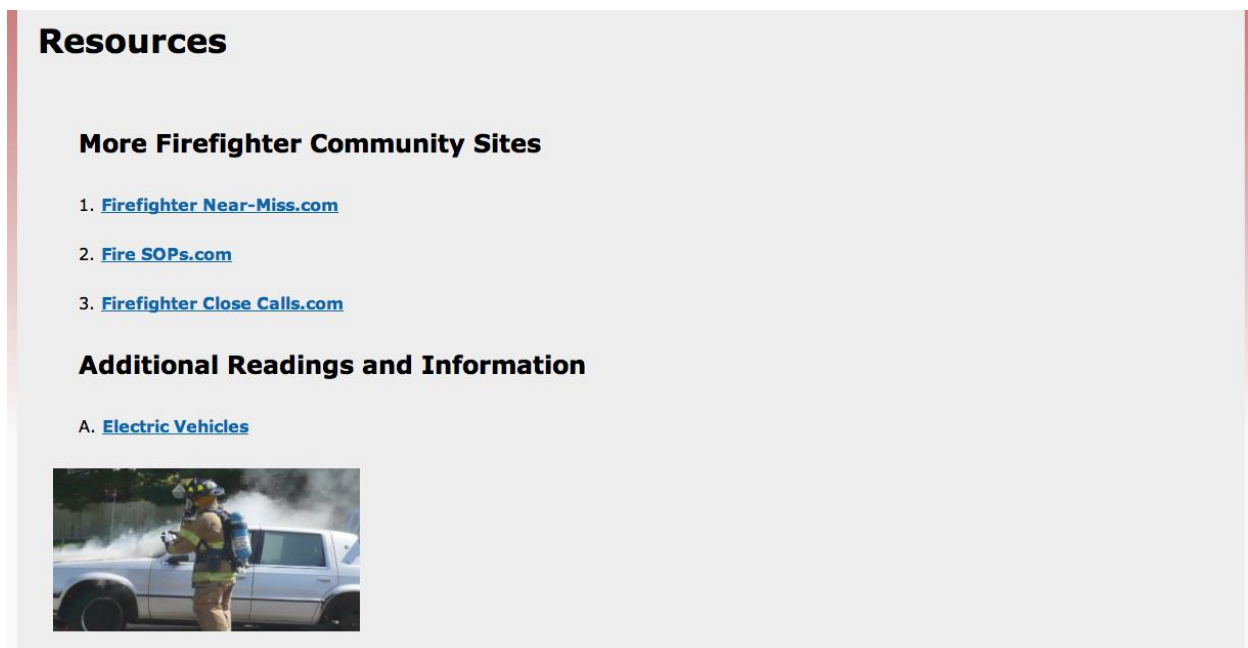


Figure 12: Resources page

Site Usability and Potential Improvements

The design of the website has been purposely made very simple, and there are many ways to access each of the peer production documents. Design Claim 32 from Robert Kraut and Paul Resnick's book: *Building Successful Online Communities: Evidence-Based Social Design*, states that "people will be more willing to contribute in an online group the more that they are committed to the group." A main part of this commitment is making the site goal very clear so that users understand that their comments are helping the larger cause of fire fighters

nationwide. The main goal of Firecrowd is stated on the landing page, and even on the document page it is easy to see what the Firecrowd community is working on and what has been refined.

Firecrowd has several possible changes and new pieces to integrate in the future. Kraut and Resnick (2008) say that it is a good idea to give “rewards, whether in the form of status, privileges, or material benefits [to] motivate contributions.” This could be accomplished in several ways such as posting a Top Department page where users can see which departments have the most registered individuals, as well as which individuals have contributed the most. This form of competition could foster a sense of overall fire fighter community on the site and motivate people to contribute. The login process should also be considered in ongoing iterations. Users currently login with their email to create a sense of responsibility for their actions in the community, and also so that the Firecrowd administrators can contact them if the need arises. However, users may not want to provide their email address to a new website. The user profile creation currently includes an opportunity to upload a picture and provide personal information, but testing so far has found that most people prefer to keep the login process streamlined and will not fill out unnecessary information. As the site increases in use, we will be able to understand how to make the login system a better fit for user needs.

Once the site is ready for launch, we anticipate that the website will not take off on its own – it will need attention from key individuals in the fire fighter and emergency response communities. When the site is ready to be sent out to fire fighters across the nation, we expect it will be sent to the health and safety or training coordinator for each fire station who can then broadcast the site to fire fighters through email and verbal means. Raising the excitement of

these key individuals and groups will allow rapid word of mouth spread of information about Firecrowd.

We anticipate that the text-edit method of changing the SOP in progress text will be successful, but it will be interesting to observe the trends on the site and the effectiveness of the peer production mechanisms. Administrators will keep an eye on the SOPs in progress changes, but ultimately the final best-practice SOP is in the hands of the fire fighter community.

Administration

The main duties of the administrator of Firecrowd are:

1. Wiki and SOP Upload:

Determine when individually created SOPs in Progress are ready to be uploaded onto the main SOPs in Progress page for all users to edit. This means moving the wiki in progress from a single user's page and putting it on a list with all the other wikis for everyone to edit. Once a wiki is deemed ready to become a full SOP, read through it carefully, and have the designated fire fighter health and safety contact check the wiki as well. When both parties are satisfied, upload the wiki text onto the vetted SOP page.

Specifics: When adding a user-created personal SOP in Progress to the list on the SOP in Progress page, the publishing section is on the bottom of the edit section of the page (Figure 13).

Revision information New revision	<input type="checkbox"/> Published
URL path settings Automatic alias	
Comment settings Open	
Printer, email and PDF versions	
Authoring information By Administrator on 2014-02-16 07:37:12 -0700	
Publishing options Not published	

Save Preview Delete

Figure 13. SOP in Progress Publishing Option

2. Monitor and Enhance:

Periodically, perhaps once a week, look through the comment pages on the wikis to see if there is anything to add to the vetted SOPs, or any disputes that need to be settled. If there is significant information to add to the vetted SOP, check it with the fire fighter health and safety contact before adding it to the vetted SOP. Applicable information can also be added to the Resources section of the website. Adding or changing sections of the SOP could potentially be a tricky job because as evidenced in other forums and email chains, firefighters feel strongly that certain methods are better than others. If there is a user clash in theories, it may be difficult to determine what should be added to the vetted SOP. If this occurs, confer with the health and safety contact.

Conclusion

Above all, this project is an experiment. Firecrowd is an experiment to see whether it is possible to refine an SOP using online peer production, but the broader significance looks at the feasibility of collecting a diverse community online to work on a public health project. Not all firefighters will be interested in this project, but for those who are, Firecrowd will be a source of information and interaction in their community, with a goal to promote safe operations and safe thinking among fire fighters nationwide. This project will take off when it hosts many SOPs, allowing the community to use peer production to create more “best practice” SOPs and standard operating guidelines on many pertinent topics. Once there is a large SOP selection, then the site can truly become a great resource for the community, giving firefighters and related health and safety personnel the ability to contribute to the safety of fire fighters across the nation.

References

- Benkler, Y. "Chapter 2. Some Basic Economics of Information Production and Innovation, Chapter 3. Peer Production and Sharing." *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven [Conn.: Yale UP, 2006. 30-62. Print.
- Duncan, M.D., Littau, S.R., Kurzius-Spencer, M., Burgess, J.L. Development of best practice standard operating procedures for prevention of fireground injuries. *Fire Technology*. 2014;50:1061-76.
- Grant, C., and Burgess, E.R. "Vehicle SOP, Wiki, About Us, Resources." *Firecrowd*. Fire Protection Research Foundation, n.d. Web. 10 Dec. 2013. <<http://firecrowd.com/>>.
- Fire Fighter Near-Miss*. Federal Emergency Management Agency, n.d. Web. <<http://www.firefighternearmiss.com/index.php/home>>.
- "FIRE SOPs." *Fire SOPs RSS*. Roger Kendrick, n.d. Web. 10 Dec. 2013. <<http://www.firesops.com/>>.
- Kraut, R. E., and Resnick, P. "Encouraging Contribution to Online Communities." *Evidence-based Social Design: Mining the Social Sciences to Build Successful Online Communities*. Cambridge, MA: MIT., 2008. N. pag., 30 Dec. 2008. Web. 8 Dec. 2013. <<http://kraut.hciresearch.org/sites/kraut.hciresearch.org/files/articles/Kraut10-Contribution-current.pdf>>.
- [NFPA 1500: Standard on Fire Department Occupational Safety & Health Program](#). National Fire Protection Association. Quincy, MA. 2012.
- [NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments](#). National Fire Protection Association. Quincy, MA. 2010.
- United States Fire Administration. Guide to Developing Effective Standard Operating Procedures for Fire and EMS Departments, FA-197, Emmitsburg, MD: Department of Homeland Security, Federal Emergency Management Agency. 1999.