Local Fire Department

Wildfire Preparedness and Readiness Capabilities

24 OCT 2015 | Backyards and Beyond Wildland Fire Education Conference
Purpose

1. Identify the most important elements in a WUI fire protection program, including both response and community risk reduction.

2. Describe how fire departments overcome barriers and adapt to risk given the resources available to them.
### Firefighters

**Population Protected** | **# Fire Departments**
--- | ---
1,000K or more | 17
500K to 999,999 | 40
250K to 499,999 | 62
100K to 249,999 | 268
50K to 99,999 | 530
25K to 49,999 | 1,318
10K to 24,999 | 3,567
5K to 9,999 | 4,384
2.5K to 4,999 | 5,807
Under 2.5K | 14,059
**Total** | **30,052**

Source: NFPA U.S. Fire Department Profile 2013
Collaborators

IAFC Wildland Fire Committee
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Project Timeline

- **Oct – Dec 2014**: Research study development
- **Mar 2015**: IAFC WUI Conference In-Person Interview
- **Sept 2015**: Analysis and research paper. Draft report for review.
- **Mar 2016**: Present findings at the 2016 WUI Conference

- **Feb - Mar 2015**: IRB application development
  - Mock testing & Pilot Testing
- **April – June 2015**: Telephone Interview 26 rural and 20 urban fire departments
  - Transcription of interviews in preparation for qualitative analysis
- **Oct - Nov 2015**: BYB presentation
  - NFPA Journal Article
  - Phase 1 Report
- **Summer 2016**: Phase 2 Report
n = 46
*Rural = 26
Urban = 20

*NFPA 1142: Rural < 500 persons/sq.mile
Methodology

1. Interview local fire department chiefs or senior line officers who have experienced a major wildfire event within the last few years (~ 1-5 years).

2. Pre-survey (closed questions).
   – 19 questions

3. In-person or telephone interview (open questions).
   – 1 hour time frame
   – Interviews recorded
Qualitative Research

• Over 2,760 minutes of audio recordings

• Over 1,150 pages of audio recordings transcribed

• Phase 1 – 1st 25 interviews coded & analyzed

• Phase 2 the residual 21 interviews plus additional themes

• Pilot test on the semi-structured data using a machine learning protocol
Quantitative Research

1. Descriptive statistics on closed questions
2. All 46 records analyzed
Phase 1 Report

Summary of Findings
Wildfire Response
- Equipment
- Training
- Health
- Fitness

Community Risk Reduction
- Prevention
- Mitigation

Relationship Building & Cooperation

Communicating w/ Public
1) Wildfire Response

I. Quantitative results

II. Equipment
   - Apparatus
   - Radios
   - PPE

III. Training

IV. Communicating w/ the public
Quantitative Results

Fire Response Time Breakout (n = 45)

- Structural Fire: 44%
- Wildland Fire: 25%
- Same for both: 31%
Quantitative Results Cont’d

- 73% wildfire **pre-attack plan** (SOG) in place
- 76% **auxiliary** or support roles
- 83% **health** screening program
- 1/2 **rural** fire departments have **fitness** program
  - Of those, only 1/2 use the NWCG physical fitness ‘pack’ test
- 3/4 **urban** fire departments have **fitness** program
  - Of those, less than 2/3 use the NWCG physical fitness ‘pack’ test
Quantitative Results Cont’d

- 85% use chainsaws in a wildfire event
  Of those,
  - 44% **ALL** personnel formally trained
  - 8% **NO** formal training
  - 82% **ALL** appropriate PPE
  - 8% **NO** PPE
  - 54% of **swampers** (helpers) wear same PPE as c/saw operator
100% believe that collaboration with other emergency response organizations is extremely important
WUI/Wildland Fire Apparatus

• **Variations** in perceptions of the advantages and disadvantages of different types of apparatus.

• **Managing** budgetary limitations by thoughtful choices about apparatus that could be used for multiple purposes and strategic dispatching.

• **No evidence** for “one best” approach to dispatch protocols, rather protocols appropriate to local conditions.
Wildland/WUI fire PPE

• **High rates of compliance**, further study into various factors that brought compliance rates below complete compliance is needed.

• **Issues** around timing of use, location of transitions in gear, staffing and policies need to be investigated to determine best ways to raise compliance rates.
Radio technology

- **Broad awareness** of potential for communications problems due to incompatible radio systems.
- While technology can ameliorate some of the problems, **training** and **logistical** issues will remain regardless.
- There is **no “one size fits all” solution** to radio communications problems, since individual circumstance (geography, budget, relationships) will vary.
- **Decisions** about new radio equipment purchases should always be made in consultation with other agencies/departments.
Training

• **Transition** from *traditional* training practices that emphasized *structural* as opposed to *wildland/WUI fire* training.

• *Wildland/WUI training* adopted *inconsistently*, with local and regional variations in level and adequacy.

• **Fitness levels** may not always be *adequate* to the rigors of *Wildland/WUI events*. 
Training Cont’d

• **Wide range of strategies** to improve Wildland/WUI training
  – State-wide systems
  – Interagency simulation/drills
  – Added Wildland/WUI training to refresher programs
  – Training needs assessments
  – Encouraged personnel to participate in external (federal) complex wildland/WUI assignments
  – Created Wildfire divisions or programs
Training cont’d

• FD’s increasingly manage fire in the WUI, and wildland firefighter training, although separate from traditional firefighting, **is becoming a more and more sought after capability.**

• **Utility NWCG** wildland fire training and fitness guidelines. Emphasis on FFT 2.

• **PMS 310-1 wildland fire qualification system “crosswalk” guide** now incorporates structural firefighters existing fire suppression skills. **Standardized** approach guide FD’s to develop appropriate training programs to meet their needs.
Communicating w/ Public

• All FD’s seem to use traditional methods, FD’s differ in terms of their utilization of social media and may be a lost opportunity.

• Further research:
  – Extent and nature social media use to address effective ways to integrate these approaches with traditional methods.
  – Availability and training of staff dedicated to communicating with public (PIO’s) to determine the extent FD’s have these resources.
  – Rural FD access to internet and cell phone service limits ability with public and how cultural and language difference play a role in communications effectiveness.
2) Community Risk Reduction

I. Quantitative results

II. Community risk reduction

III. Relationship Building and Cooperation
Quantitative Results

Community Risk Reduction
Time Breakout (n = 46)

- Structural fire CRR: 46%
- Wildfire CRR: 22%
- Do not do fire prevention: 2%
- About same for both: 30%
CRR Program: 76% have a program and of those:
Quantitative Results Cont’d

• 69% w/ Wildfire CRR activities have personnel that are not grant funded.
  – Only 6% are grant funded

• ¾ familiar with Verisk Analytics/ISO Fire Suppression Rating Schedule.
  – Of those only 35% aware of the additional credit for CRR
  – Only 40% believe it is an incentive
96% believe that collaboration with other organizations in addressing CRR and mitigation activities within a community is extremely important.
Community Risk Reduction

Nearly all interviewees spoke to positive effect of CCR efforts on mitigating the risk of major wildfire events and losing homes and property should a fire occur
Barriers to CRR

• Homeowner’s in some communities rely to heavily on FD’s to do fuel reduction projects.
• Others want little involvement from outside agencies when it comes to managing vegetation on their property…especially when FD’s trying to enforce state regulations and codes.
• Difficult for FD’s to engage homeowner’s in collaborative mitigation efforts.
Community Risk Reduction (Cont’d)

Vast majority of interviewees steadfast in belief in the importance of increasing **community awareness** of wildfire risk and **community engagement** in mitigation efforts.
Community Risk Reduction (Cont’d)

- **Most** have **public education** and outreach programs aimed to engage residents:
  - Door-to-door to discuss homeowner’s risk, D-space etc.
  - Major role adopting: FAC, FWC, RSG
- **Financial** issues and lack of **dedicated** staff inhibit the FD’s and communities ability to carry out CRR.
- **Further research** could offer greater insight FD’s successes and failures in adopting and enforcing WUI codes.
Not everyone talked of building relationships and robust networks in fire preparedness and mitigation planning. Those who did gave extensive and detailed accounts of their cooperative efforts.

Those that work with multiple and diverse stakeholders in the planning process seemed proud of the relationships cultivated and the plans they have cooperatively developed.
Relationship Building & Cooperation

• Through networks like the FAC learning network, conferences and forums, FD’s have been able to share:
  – lessons learned
  – best practices
  – challenges

• Emphasized importance of reaching across jurisdictional boundaries to consider wider issues at county and regional level.
Relationship Building & Cooperation

- Some FD’s collaborate very little with other agencies and organizations in fire preparedness and mitigation planning.
- Some have wide-reaching networks and partnerships.
- Others reported minimal engagement with government agencies, residents, HOA’s and other groups.
- Further research to understand barriers to cooperative planning.
Phase 2

• Next Summer
  – Build upon what we learned in the first 25 interviews
  – Precarious situations on the fireground
  – Situational awareness
  – All-Volunteer Fire Departments
  – Firefighter health and fitness
  – West versus East differences
Research implications

• Informing Fire Protection Research Foundation about gaps

• Providing broad information to inform TC like:
  – NFPA 1901, *Automotive Fire Apparatus*
  – NFPA 1906, *Wildland Fire Apparatus*
  – NFPA 1051, *Wildland Firefighter Professional Qualifications*
  – NFPA 1143, *Wildland Fire Management*
4th Survey of the Needs of U.S. Fire Service
Fourth Survey of the Needs of the U.S. Fire Service

Download the survey in .pdf format: Needs Assessment Survey

Please check your login details and try again

NFPA FDID:

Password:

www.nfpa.org/2015needsassessment
16. Wildland-Urban Interface (WUI)/Wildland (brush, grass, forest) firefighting.

A. Is this a role your fire department performs? (Check one)  □ Yes  □ No  (If no, go to Question 17.)

B. What percentage of the personnel who perform this duty have received formal training (for example in a classroom or online) at the local, regional or state level (not just on-the-job training)?
   □ None (0%)  □ Few (1–25%)  □ Some (26–50%)  □ Many (51–75%)  □ Most (76–99%)  □ All (100%)

C. Does this training include specialized Wildland-Urban Interface firefighting operations training?  □ Yes  □ No

D. How many of your emergency responders are equipped with wildland fire personal protective clothing?
   □ None (0%)  □ Few (1–25%)  □ Some (26–50%)  □ Many (51–75%)  □ Most (76–99%)  □ All (100%)
45. Wildland-Urban Interface (WUI) fire affecting structures.

A. Is protecting structures in the Wildland-Urban Interface (WUI) a role your fire department performs?  
   (Check one)  □ Yes  □ No  (If no, go to Part VII)

B. What is the maximum number of structures your department could handle alone?  
   □ 1  □ 2-5  □ 6-20  □ 21 plus

C. What is the maximum area (acres) your department could handle alone?  
   □ Less than 1 acre  □ 1-10 acres  □ 11-50 acres  □ 51-100 acres  □ Greater than 100 acres

D. If you had an incident affecting 2-5 structures how far would you have to go to obtain enough people with specialized training and equipment for this incident?  
   (Check one)  □ Local would be enough  □ Regional  □ State  □ National

E. If you had an incident affecting 6-20 structures how far would you have to go to obtain enough people with specialized training and equipment for this incident?  
   (Check one)  □ Local would be enough  □ Regional  □ State  □ National

F. If you had an incident affecting more than 20 structures how far would you have to go to obtain enough people with specialized training and equipment for this incident?  
   (Check one)  □ Local would be enough  □ Regional  □ State  □ National

G. Do you have a plan for obtaining assistance from others on this type of incident?  
   (Check one)  □ Yes, written agreement  □ Yes, informal  □ Yes, other (Specify) ____________________  □ No
MOVING TOWARD A FIRE ADAPTED COMMUNITY

Following the most destructive fire in Colorado’s history, representatives from the Fire Adapted Communities (FAC) coalition toured Colorado Springs to analyze the Waldo Canyon Fire’s impacts and learn how the community had prepared itself.
Wildland-Urban Interface: Fire Department Wildfire Preparedness and Readiness Capabilities

Phase 1 Report

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