2014

IMPROVING COMMUNITY RESPONSE TO WILDFIRE:

2013 FIRE SEASON FINDINGS REPORT

ELK COMPLEX

In 2013, the Fire Chasers Research Team at North Carolina State University developed a series of incident performance measures in collaboration with incident response and land management professionals. The goal of this effort was to provide metrics that can help improve interagency coordination and communication during complex, large scale wildfires. In the summer of 2013, data on these incident response outcomes were collected from 22 Type I and Type II wildland-urban interface fires in Idaho, Montana, Oregon, and Washington. This report summarizes the findings from the Elk Complex in the areas of interagency network performance, incident management team performance, use of social media and incident learning and capacity building.

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FIRE CHASERS PROJECT

Advancing the science of adaptive capacity toward more disaster resilient communities

Elk Complex: Incident Report

Study Background

This report summarizes findings on incident response outcomes for the Elk Complex that occurred in 2013. The report presents outcomes of the Elk Complex compared to twenty-one other Type I and Type II incidents that occurred in Idaho, Montana, Oregon, Washington, and one pilot incident in Colorado, during the 2013 wildfire season. The goal of this report is to provide disaster, fire response, and land management agencies with feedback on the incident. This feedback is designed to help identify areas of strength, as well as prioritize areas for capacity building to improve incident response in the upcoming fire season. This report summarizes findings on the following areas: 1) interagency network performance; 2) incident management team performance; 3) use of social media; and 4) incident learning and capacity building. All findings are based on surveys completed by key personnel associated with the incident management team, host agency, and cooperating disaster response agencies on each incident. County and municipal elected officials in the affected area were also surveyed. Surveys were generally collected from Type 1/Type 2 incident management team members immediately before they transitioned off the incident. Surveys with host agencies and county disaster response agencies were collected in October/ November of 2013. A total of 31 surveys were completed for the Elk Complex (62 percent response rate).

How Should I Interpret the Data in This Report?

Incidents differ in their complexity and more complex incidents can create more challenges. The information contained in this report is based solely on the survey data and indicators *do not* account for differences between incidents. This should be kept in mind when interpreting findings from a single incident in relation to the regional incident averages. Findings with lower response rates should also be interpreted with greater caution as there may be key perspectives that are missing. Recommended questions for reflection in interpreting the findings from this report include:

> **In what areas did we excel during this incident? What strategies and actions did we take that may have contributed to this success? What actions can we take to make sure these practices and lessons are retained for future incidents?**

> **In what areas were our ratings comparatively less positive? How do we make sense of those? Were there missed opportunities either *before* or *during* the incident that might have improved our outcomes in this area? Are there actions we can take *now* to help ensure future success in this area?**

Overview: A brief summary of the Elk Complex

On the night of August 8, 2013, several lightning fires burned together on the Boise National Forest resulting in the Elk Complex. The following day evacuations were put in place for the communities of Prairie, Fall Creek, and Lester Creek alongside road closures issued for roads off Highway 20, Cow Creek Road and Black Creek Road. On August 11, Harvey's Type I Incident Management Team (IMT) transitioned onto the Complex. At its peak, the Elk Complex threatened over 480 residences, destroying 38 it its wake. Other values-at-risk included groups of livestock and bull trout habitat. The fire remained an imminent threat to the community through August 18, when residents were allowed back into their homes. On August 22, Redinger's Type III IMT transitioned onto the complex and 100 percent containment was achieved on August 31 with Nemore's Type IV IMT. Over 130,000 acres burned in total and, according to Inciweb, 75 percent of the burned area had high-to-moderate burn severity.

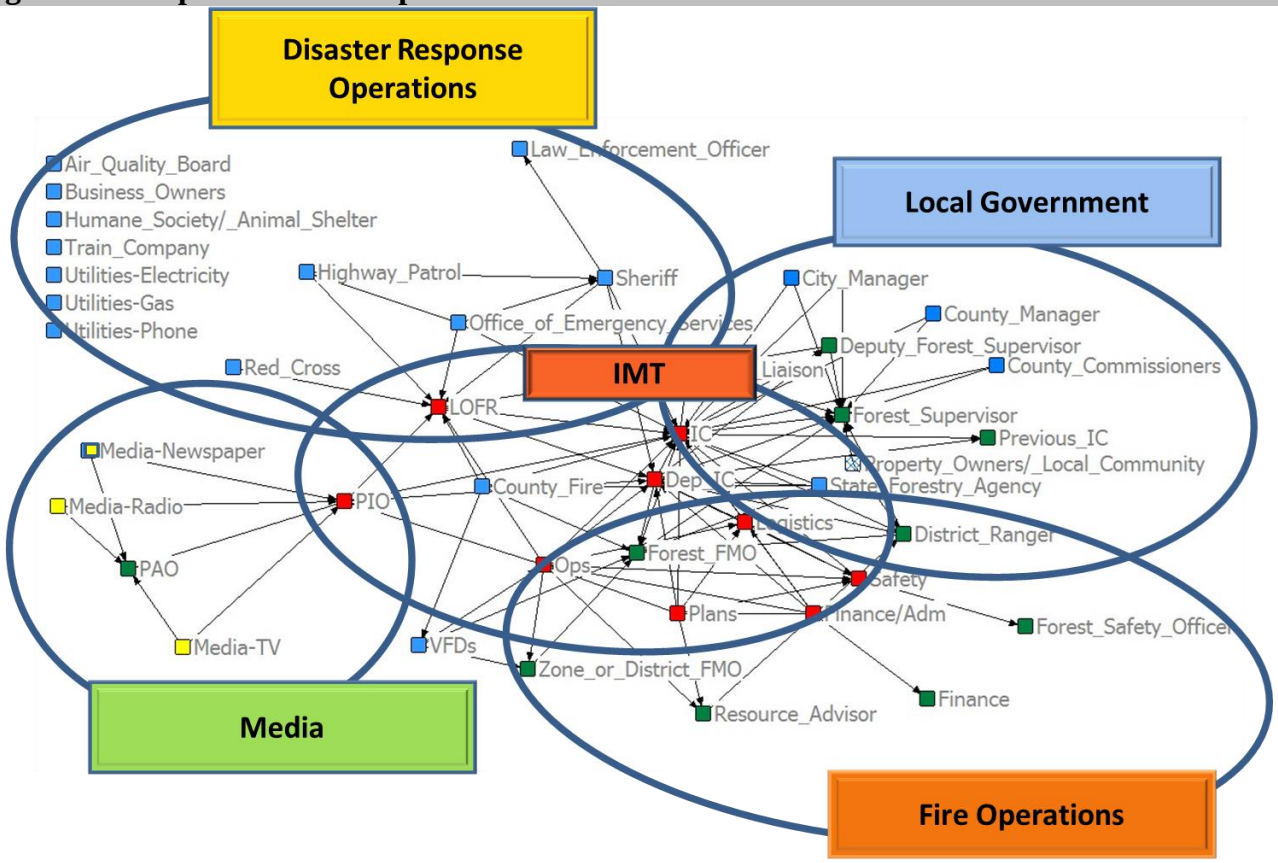
Cooperators on Elk included Elmore County Commissioners' Office, Elmore County Sheriff's Office, Elmore County Disaster Services, Idaho Department of Fish and Game, Idaho Department of Agriculture, Idaho Department of Transportation, Mountain Home Volunteer Fire Department, and Nester's Pine Resort and Motel.

Incident Response Network Performance: Elk Complex

What Is an Incident Response Network?

Effective incident response to a complex wildfire event involves the coordination of multiple organizations and agencies with formal response responsibilities during the incident. This group of organizations and agencies can be referred to as the *incident response network*. This network typically includes the incident management team, fire management operations, disaster management operations, county and municipal government, and the media. Diagram 1 shows what this network might look like.

Diagram 1. Sample Incident Response Network



What is network performance?

When working as part of an inter-connected network like the one shown in Diagram 1, the actions of any one agency within the network can affect others in the network. Consequently, incident outcomes are often the result of the *combined* management actions of the entire network, and the level of communication and coordination within it. Not all agencies are involved in all areas of incident response. However, problems in one area of the network can lead to problems in other areas. As a result, effective incident response is not about the performance of any single organization or agency, but is related to the performance of the *network as a whole* in the following areas:

- Interagency coordination & fire response
- Public information
- Road closures
- Evacuation and re-entry
- Sheltering & mass care
- Cost share

To learn more about network performance, we asked all agency and organizational leaders in the incident response network to rate how things went in each of these six areas. Respondents were asked their level of agreement with a set of statements. Options ranged from (1) "strongly disagree" to (5) "strongly agree." Overall, network performance scores were high. Some areas are also worthy of additional attention prior to fire season 2014. For the twenty-two fires in our sample, overall network performance was the highest for interagency coordination and fire response (average = 4.44) and public information (4.34). On average, lower performance ratings were provided for cost share (3.87), evacuation (3.99), and sheltering/mass care (4.0). See Appendix A for specific questions asked in each category and average level of agreement for each.

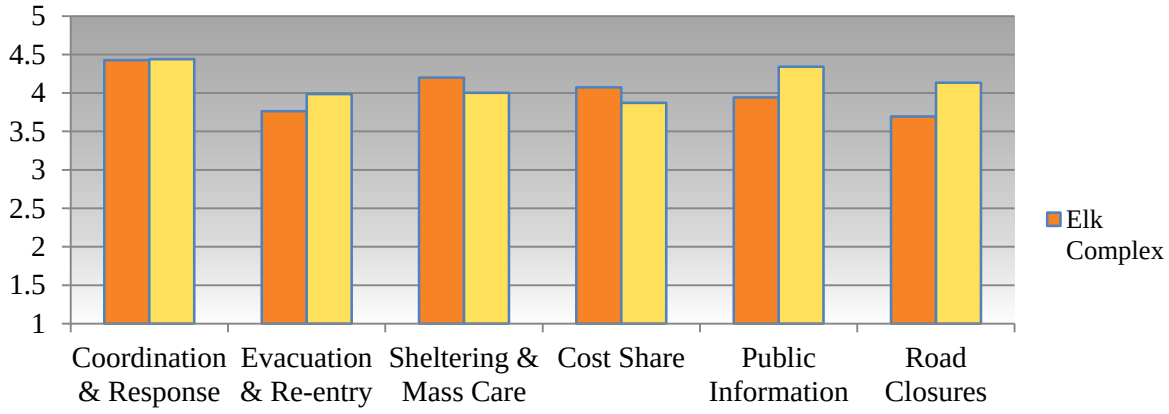
Network Performance: How did things go on the Elk Complex?

Figure 1 shows network performance ratings for the Elk Complex in comparison with the average across all twenty-two fires in our sample. Elk Complex network performance was higher than average for the areas of sheltering and mass care and cost share. In particular, providing for auxiliary care needs of evacuees and using pre-agreed frameworks to expedite cost share agreements were noted as areas of success. Relative to other areas, respondents felt most positively about their performance in coordination and fire response. Elk Complex network performance was lower than average for evacuation and re-entry, public information, and road closures. The area where respondents reported the most room for improvement was in road closures, specifically in regard to proactively communicating trigger points for road closure decisions to the public. While sheltering overall appeared to be an area of relative success, ratings suggested more work could be done in clearly communicating sheltering options to evacuees (See Appendix A).

KEY FINDINGS

- Coordination and fire response, sheltering and mass care as well as cost share performance were noted as areas of success, particularly in terms of providing auxiliary care needs of evacuees and using pre-agreed frameworks for the cost share
- The area where respondents reported the most room for improvement on Elk was in road closures, specifically in regard to proactively communicating trigger points for road closure decisions to the public

Figure 1. Average Network Performance by Activity: Elk Complex



Incident Management Team Performance: Perspectives from host agencies and local cooperators

On each incident, we asked representatives of local cooperating agencies, the Forest Service, and other host agencies to reflect on how well the incident management team communicated and coordinated with local host agencies and cooperators. Incident management teams (IMTs) were assessed across 19 areas outlined in Table 1 on the following page. The response options ranged from "No room for improvement" to "A lot of room for improvement," and included "Don't know" and "Not applicable" choices.

Across all twenty-two incidents, incident management teams were reported to perform the best in: 1) being accessible; 2) acknowledging cooperation; 3) sharing credit; and 4) serving as positive ambassadors in interactions with the local community. On average, scores were quite positive across all areas. However, host communities reported the greatest room for improvement for IMTs in the areas of: 1) obtaining local context information to inform fire operations; 2) incorporating information about local values at risk into fire management plans; and 3) engaging affected jurisdictions in planning and decision making from the beginning. The first column of Table 1 lists the average room for improvement for incident management teams across all fires. The second column displays average room for improvement for the Elk Complex incident management team. For each item in Table 1, ***lower numbers indicate less room for improvement***. The scale includes (0), indicating "no" room for improvement, (1) "a little," (2) "some," (3) "quite a bit," and (4) "a lot."

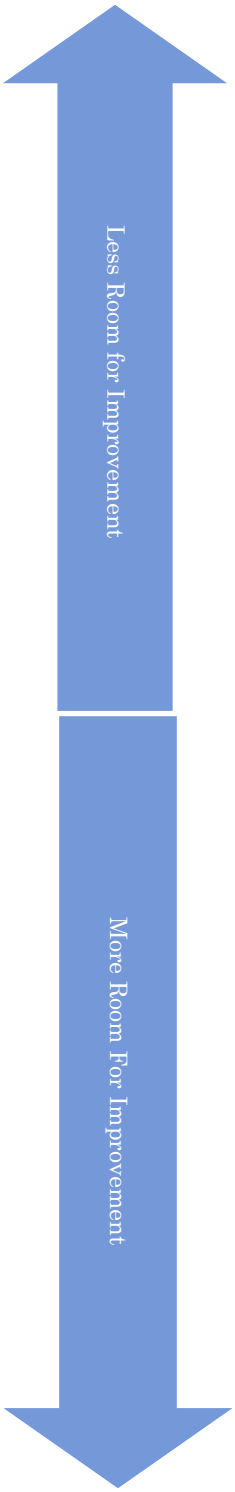
KEY FINDINGS

- On average, Harvey's Type I IMT was rated better than the regional average in 6 out of 19 areas during the Elk Complex
- Relative IMT strengths on the Elk Complex included:
  - being accessible to local agencies
  - staying in their lane and not overstepping their delegation of authority
  - using the incident as a training opportunity to build local capacity
- An area the IMT may want to continue to focus on for improvement is engaging affected jurisdictions in planning and decision making from the beginning

Average responses for Harvey's Type I IMT on the Elk Complex ranged from 0.8 to 1.4, indicating "a little" room for improvement. The team was rated more positively than the regional average in 6 of 19 areas during the Elk Complex, however average scores were generally on par with the regional average Areas of relative strength for Harvey's team included being accessible to host agencies and cooperators, staying in their lane, not overstepping their delegation of authority and using the incident as a training opportunity to build local capacity. Harvey's team was rated less positively in terms of engaging affected jurisdictions in planning and decision making from the beginning of the incident.

TABLE 1. Elk Complex Incident Management Team Room for Improvement

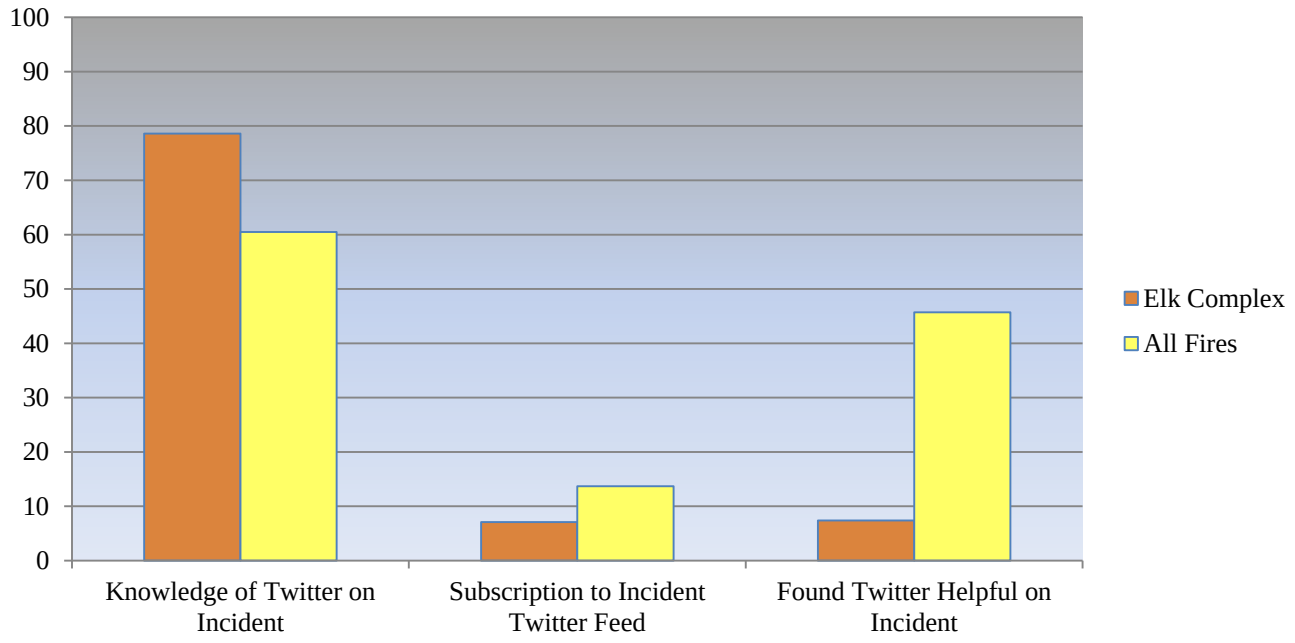
Area for improvement in working with Host Unit and local cooperators	22 Incident Average Room for Improvement (0-4)	Elk Complex Average Room for Improvement (0-4)
Being accessible to you	1	0.8
Staying in their lane and not over-stepping their delegation of authority	1	0.9
Using the incident as a training opportunity to build local capacity	1.2	0.9
Rapidly identifying key local players they needed to be communicating with during the incident	1.2	1
Sharing credit with your agency	1	1
Obtaining local context (e.g., burn scars, trail systems, local weather patterns) to inform their operations	1.3	1.1
Being sensitive to local community culture and political climate	1.25	1.1
Serving as a positive ambassador in interactions with the local community	1	1.1
Being helpful to cooperating agencies	1.1	1.1
Acknowledging cooperation	1	1.1
Getting your agency information you needed to be effective	1.2	1.2
Valuing local knowledge and local input	1.2	1.2
Incorporating information about local values at risk (e.g., biological, archeological, cultural, recreational) into the management of the fire	1.3	1.3
Seeking to understand organizational culture, values, and capacities of your agency	1.2	1.3
Clarifying roles and responsibilities	1.2	1.3
Including your agency in the dissemination of vital information during the incident	1.2	1.3
Valuing your agency's input	1.2	1.3
Being flexible in adapting their fire management strategy to account for local preferences	1.2	1.3
Engaging affected jurisdictions in planning and decision making from the beginning	1.3	1.4



Twitter Use

Social networking sites, such as Twitter, have become important tools for sharing information during various emergencies. Researchers are only beginning to study the implications of social media for risk communication and practitioners are often interested in best practices for using social media. As part of our survey, we asked local cooperators and Forest Service personnel whether they knew of an "official" Twitter feed associated with the wildfire incident, whether they subscribed to this feed, and whether or not they found the information on Twitter helpful. Figure 2 shows percentage of Twitter use for Elk Complex compared to the average rate across twenty-one fires in our sample that reported on social media.

Figure 2. Percent Social Media Use and Utility on the Elk Complex



Inciweb, the Boise National Forest, the Wyoming National Guard, the National Weather Service, and several engaged but unofficial fire watchers all tweeted information about the Elk Complex. Much of the Twitter activity was retweeted information from Inciweb. When compared to the 21 incident average, respondents from the Elk Complex had more knowledge of Twitter, but there was a lower percentage of subscribers to Twitter, and respondents were much less likely than average to find Twitter helpful.

KEY FINDINGS

- Elk Complex respondents were more aware of Twitter information resources than respondents across other incidents
- Elk Complex respondents subscribed to Twitter information feeds with less frequency than respondents across other incidents
- Elk Complex respondents did not find Twitter information sources as helpful as did respondents across other incidents

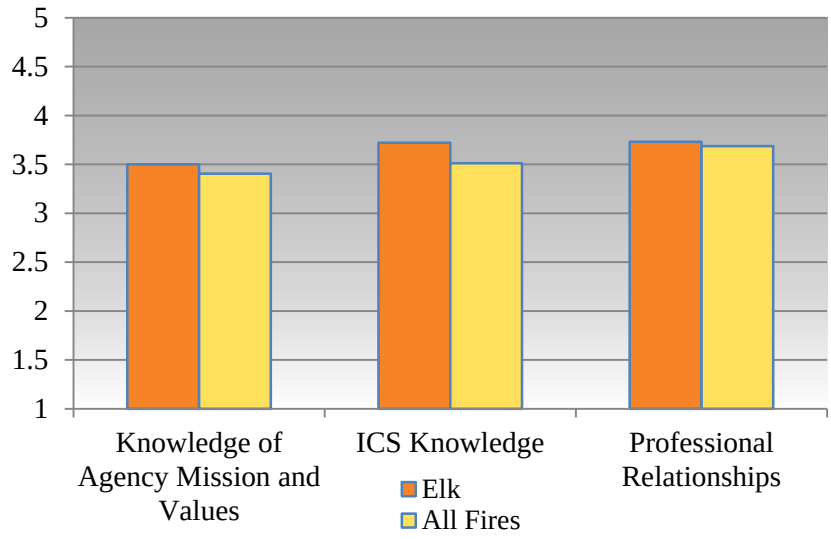
Moving Forward: Incident learning and capacity building

The field of incident response prioritizes using every incident as an opportunity for learning and relationship building to improve capacity for responding to future events. To assess incident learning and capacity building, respondents were asked to report how personal outcomes were influenced by the incident in the areas of: 1) increased knowledge of other agencies' missions and values; 2) enhanced knowledge of the Incident Command System (ICS); and 3) increased familiarity and strengthened professional relationships within the local network. Respondents were asked to rate how each factor was affected by the incident, on a scale ranging from (1) "much worse" to (5) "much better", with (3) indicating "no change." See Appendix B for specific questions asked in each category and average level of agreement for each.

KEY FINDINGS

- Over all wildfire incidents we studied, evidence suggests that knowledge of agency missions and values, ICS knowledge, and professional relationships were perceived to have improved
- Elk Complex respondents reported slightly higher scores than regional averages in all three areas
- For the Elk Complex, the greatest impact was on professional relationships, specifically improvements in professional networks among area leaders

Figure 3. Incident Learning and Capacity Building from the Elk Complex



Across all the wildfire incidents we studied, evidence suggests that knowledge of other agency missions and values, ICS knowledge, and professional relationships were perceived to have improved. Across all incidents, local cooperators and host agencies reported the greatest improvements in the area of professional relationships, which included respondents reporting strengthened professional relationships with leaders of cooperating agencies, stronger relationships within counties, and better knowledge of the capacities and constraints of cooperating agencies. The least improvement was shown in local cooperator and host agency knowledge of agency missions and values, which included knowledge of the mission and values of state land management agencies and the National Forest. In the middle range is knowledge of the Incident Command System, which includes familiarity with ICS, opportunities to gain additional training in an area of incident response, and understanding how to work with an IMT, including areas in which IMTs can assist counties.

On the Elk Complex, all responses varied between "no change" and "somewhat better" for knowledge of agency missions and values, ICS knowledge, and professional relationships. In all three areas, improvements on the Elk complex were slightly above the 22 fire average. For the Elk Complex, the greatest impact was on professional relationships, specifically in regard to improvements in professional networks with leaders of cooperating agencies in the area.

APPENDIX A. Network Performance: Elk Complex

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	Elk Complex Average Level of Agreement (1-5)
Coordination & Fire Response		
A coordinated set of fire management objectives were agreed upon among all affected jurisdictions	4.29	4.21
All concerned jurisdictions prioritized maintaining good communication across agencies	4.21	4.00
Credit for success and effort was shared among agencies during public meetings and media events	4.37	3.94
There was a general willingness across agencies to offer assistance to other agencies or jurisdictions	4.48	4.21
"Borrowed resources" were released in a timely fashion to minimize burden on the lending agency	4.38	4.55
Community values at risk from wildfire were readily identified	4.64	4.22
Efforts to protect community values were appropriate given available resources and risks to firefighter safety	4.59	4.44
The overall strategy taken in managing this fire was appropriate	4.40	4.63
Local resources were incorporated into the incident management operations	4.50	4.67
Evacuation Performance		
Cooperating agencies were able to use existing evacuation plans to quickly establish a coordinated evacuation strategy	3.82	3.62
Residents received timely notification of evacuation status using clear, pre-established language to distinguish between an evacuation warning and an evacuation notice	4.03	3.85
Evacuations were executed in a timely and orderly fashion	4.15	3.93
Cooperating agencies had a prepared plan for how re-entry into evacuated areas would be coordinated	4.05	3.67
Trigger points for when evacuated areas would be opened for re-entry were clearly communicated to the public	3.88	3.87
Re-entry was carried out in an organized and orderly fashion	4.15	3.87
Sheltering & Mass Care		
Adequate sheltering options were prepared to house evacuees	4.16	3.89
Sheltering options were clearly communicated to evacuees	4.01	3.56
Donations for evacuees were well-coordinated	3.74	4.00
Auxiliary care needs of evacuees (e.g., food, water, clothing, transportation, spiritual or mental health assistance) were adequately provided for	4.05	4.20
Adequate sheltering options were made available to evacuate pets and livestock	3.88	4.17
Cost Share Performance		
We used pre-agreed frameworks/principles to expedite cost share agreements	3.80	4.33
The process through which cost share was decided upon was fair	3.86	4.00
The resulting cost share agreement was fair	3.96	4.00

APPENDIX A. Network Performance: Elk Complex (continued)

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	Elk Complex Average Level of Agreement (1-5)
Public Information Performance		
Public information was coordinated among cooperating agencies to ensure continuity of the message	4.35	4.00
Local resources were leveraged to ensure timely dissemination of public information	4.32	4.20
Social media was used effectively to provide timely public updates concerning the status of the fire	4.16	3.69
A system for communication with the media was put in place to ensure timely dissemination of public information	4.42	4.00
Road Closure Performance		
All cooperating and fire management agencies maintained a timely awareness of the status of road closures	4.25	4.00
Trigger points for making decisions about road closures were proactively communicated to the local community	4.05	3.61
A consistent message was provided to the public about the status of road closures	4.11	3.76

APPENDIX B. Incident Learning and Capacity Building: Elk Complex

Areas of Incident Learning and Capacity Building	22 Incident Average Reported Impact (1-5)	Elk Complex Reported Impact (1-5)
Knowledge of Agency Mission & Values		
Your understanding of the mission and values of state land management agencies (e.g., Oregon State Forestry, DNR/DNRC, Idaho Department of Lands, Fire/Timber Protective Associations, etc.) in your area	3.43	3.56
Your understanding of the mission and values of federal land management agencies (e.g., BLM, National Park Service, USFS, etc.) in your area	3.38	3.39
Knowledge of ICS		
Your understanding of what an incident management team can and cannot do to assist your county during an incident	3.44	3.60
Your familiarity with Incident Command Systems	3.48	3.74
Your knowledge of how to work effectively with an incident management team	3.67	3.90
Opportunities for you to gain additional training in an area of incident response	3.45	3.56
Professional Relationships and Networks		
The strength of working relationships within your county	3.76	3.70
The strength of working relationships between your county the local National Forest District	3.60	3.27
The strength of working relationships with National Forest Headquarters	3.42	3.43
Your knowledge of the capabilities and constraints of cooperating agencies in your area	3.73	3.84
Your knowledge of the capabilities and constraints of the local National Forest	3.58	3.64
Your professional networks with leaders of cooperating agencies in your area	3.89	3.95
Your knowledge of your local community	3.72	3.80

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Fire Chasers: Improving Community Response to Wildfire Project

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