

2014

**IMPROVING COMMUNITY  
RESPONSE TO WILDFIRE:  
2013 FIRE SEASON FINDINGS  
REPORT**

**EAGLE FIRE**

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 Eagle Fire 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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## Eagle Fire: Incident Report

### Study Background

This report summarizes findings on incident response outcomes for the Eagle Fire that occurred in 2013. The report presents outcomes of the Eagle Fire 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 29 surveys were completed for the Eagle Fire (80 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 are 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 Eagle Fire**

On August 19th, 2013, the Eagle Fire began on Okanogan-Wenatchee National Forest lands near Chelan County and quickly grew to over 100 acres; the cause remains unknown, and the fire eventually burned 1,476 acres of land. The Ayers/Barnett Type III Incident Management Team (IMT) called in Rabe's Type II IMT, which came on to the incident response on August 21<sup>st</sup>, two days after ignition. Chelan County Fire District 3 and Washington State Department of Natural Resources had joint delegation of authority over the fire with Okanogan-Wenatchee National Forest.

Mandatory evacuation remained in place for 30 homes through August 23rd, when the alert was lowered to indicate to returning residents that they should still be ready to leave at a moment's notice. Roads, including County Road 112, were closed for several days. By August 25th, 65 residences in Eagle Creek, Bjork, Merry, and Chumstick Canyon were threatened, with some facing significant risk and potential evacuation. Leavenworth was also threatened. By this time, containment lines to stop the spread of the fire were completed along west, south, and east sides of the fire, with a significant burnout planned when conditions permitted. In addition to residences, Bonneville Power Administration power lines, timber sale areas, Public Utility District lines, threatened and endangered fish-bearing streams, and cultural resources were threatened by the Eagle Fire. No homes were damaged during the course of the Eagle Fire, but an outbuilding was destroyed. As the fire moved toward containment, the Type II IMT rotated off and a Type III IMT rotated onto the incident on August 29th. At this point, the Incident Management Team, host agencies, and local cooperators began work on mitigating resource damage caused during fire suppression activities. The fire was fully contained on August 31st, 2013.

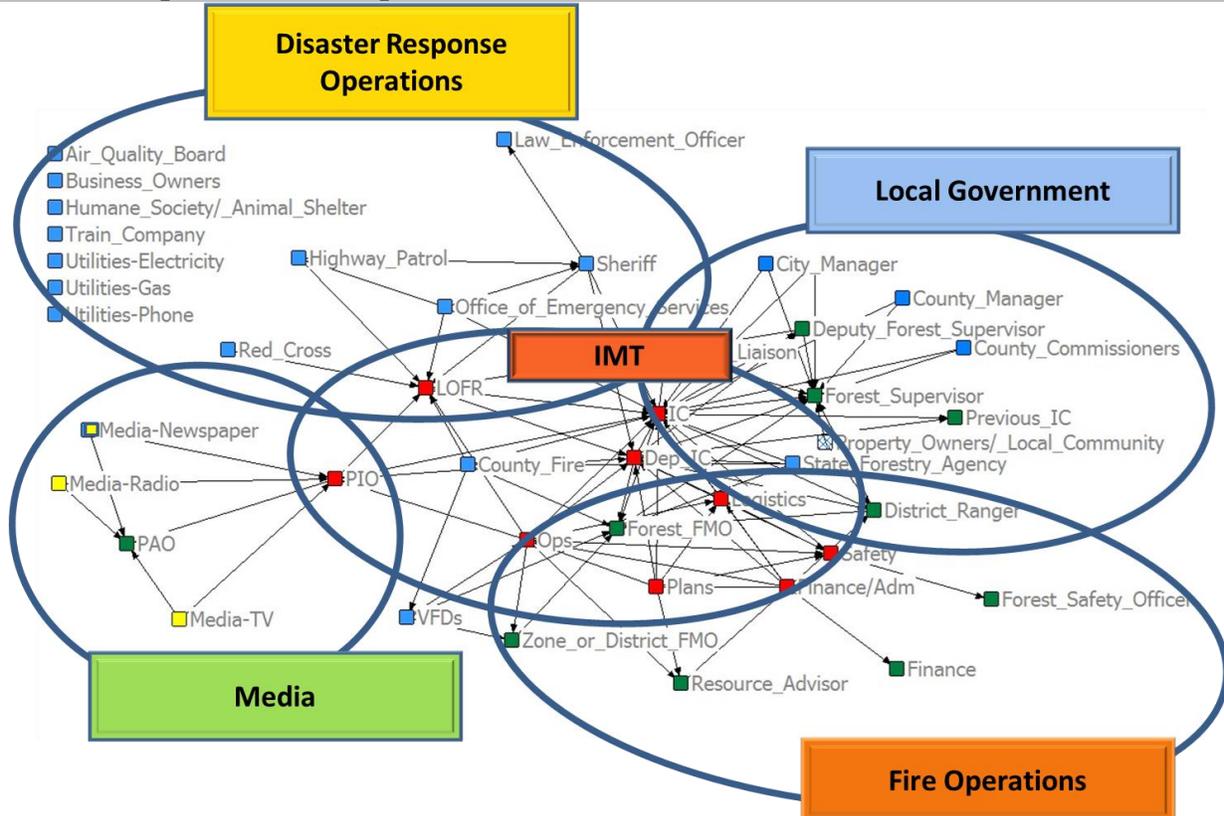
Community meetings were held in Leavenworth at the school and at Fire District 3. Cooperators meetings were an important part of response on this fire. Chumstick Wildfire Stewardship Commission was noted by the Incident Command Team as having been an especially helpful during the fire. Over a dozen individuals from Okanogan-Wenatchee National Forest Supervisor's Office and Wenatchee River Ranger District were involved in the fire. Additionally, Washington State Department of Natural Resources representatives and local agencies like Chelan County Fire District 3, Cashmere Fire Department, Chelan County Fire and Rescue, Wenatchee Fire and Rescue, and Chelan Fire Protection Districts 1, 4, 5, 6, 8, and 9 also responded to the fire. Leavenworth Mayor's Office, Leavenworth City Administrator's Office, Chelan County Commissioner's Office, Leavenworth National Fish Hatchery, Chelan County Public Utilities District, and Chelan County Sheriff were involved along with other state and local agencies.

## Incident Response Network Performance: Eagle Fire

### 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 (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.

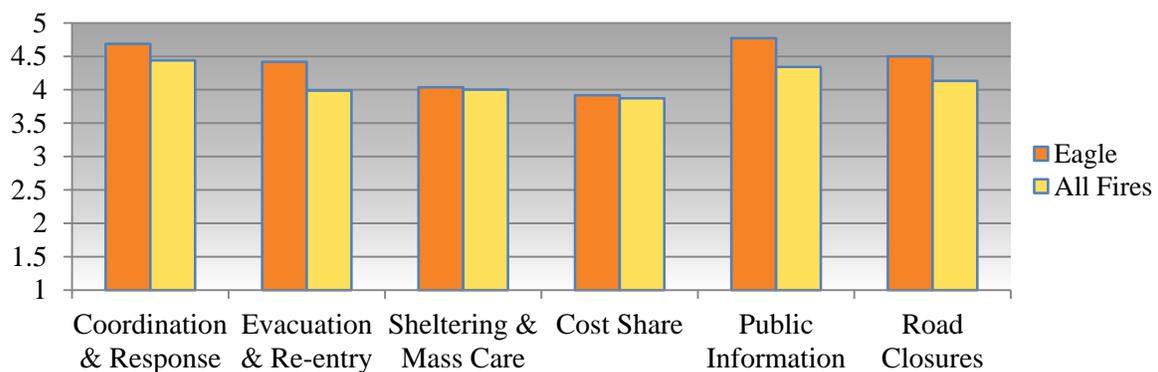
**Network Performance: How did things go on the Eagle Fire?**

Figure 1 shows network performance ratings for the Eagle Fire in comparison with the average across all twenty-two fires in our sample. In all six areas, Eagle Fire network performance was slightly higher than the averages across all fires. Eagle Fire network performance was notably higher than average for coordination and fire response, evacuation and re-entry, public information, and road closures. Network performance was slightly higher for sheltering and mass care, and cost share. Respondents provided overwhelmingly positive feedback about Eagle Fire performance in the area of public information. In particular, respondents perceived the communication system to ensure timely dissemination of public information as a notable success. However, respondents saw room for improvement in leveraging social media to provide timely updates concerning the status of the fire. While still slightly above average in comparison to the region, cost share was identified as the area with the most room for improvement on the Eagle Fire. In particular, respondents saw more room for improvement in making sure the resulting cost share agreement was fair. Evacuation overall was an area of success, however, the evacuation of pets and livestock was also an area receiving relatively lower scores (see Appendix A).

**KEY FINDINGS**

- Overall, network performance on the Eagle fire exceeded the regional average
- Public information as well as interagency coordination and fire response were areas of notable success on the Eagle Fire
- Areas identified as having relatively more room for improvement included
  - ✓ leveraging social media to provide timely updates concerning the status of the fire
  - ✓ planning for the evacuation of pets and livestock
  - ✓ ensuring the fairness of the cost share agreement

**Figure 1. Average Network Performance by Activity: Eagle Fire**



## **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 Eagle Fire 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.”

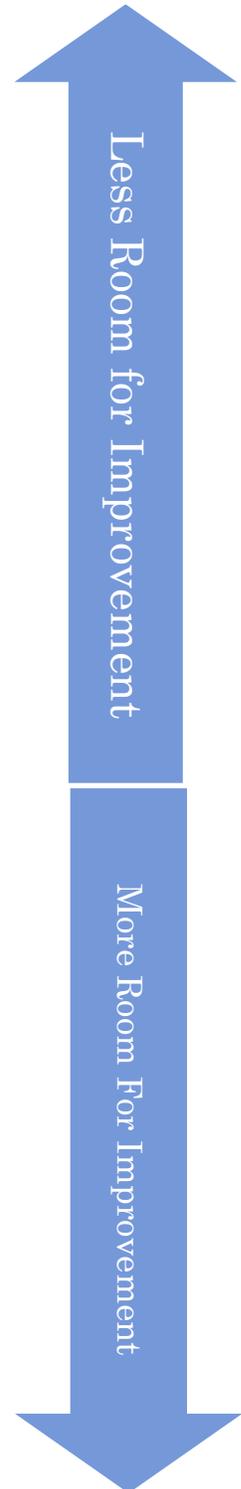
### **KEY FINDINGS**

- On average, Rabe’s Type II IMT was rated more positively than the regional average in 2 out of 19 areas during the Eagle Fire
- IMT strengths:
  - obtaining local context to inform their operations
  - being flexible in adapting their fire management strategy to account for local preferences
- Areas the IMT may want to continue to focus on for improvement include:
  - getting local agencies information to be effective
  - using the incident as a training opportunity
  - sharing credit with local agencies

Average responses for Rabe’s Type II IMT on the Eagle Fire ranged from 1 to 2.1, indicating “a little” to “some” room for improvement. The team was rated more positively than the regional average in 2 of 19 areas during the Eagle Fire, but no areas were rated as having more than “some” room for improvement. Rabes’s Type II IMT was rated most positively in obtaining local context information to inform their operations and in being flexible in adapting their fire management strategy to local preferences. On average, Rabe’s Type II IMT was on par with the region in serving as a positive ambassador in interactions with the local community, but had more room for improvement in getting information to local agencies, using the incident as a training opportunity and sharing credit with local agencies . Greatest strengths and areas for improvement for the incident management team on the Eagle Fire are highlighted in the IMT Key Findings box above.

**TABLE 1. Eagle Incident Management Team Room for Improvement**

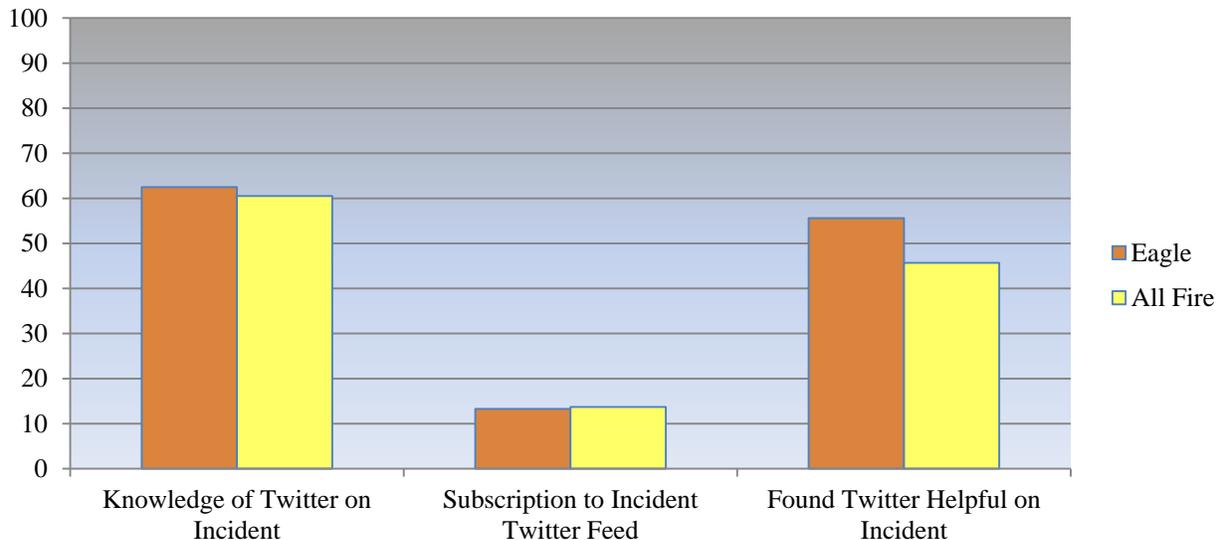
Area for improvement in working with Host Unit(s) and local cooperators	22 Incident Average Room for Improvement (0-4)	Eagle Average Room for Improvement (0-4)
Obtaining local context (e.g., burn scars, trail systems, local weather patterns) to inform their operations	1.3	1
Being flexible in adapting their fire management strategy to account for local preferences	1.2	1
Serving as a positive ambassador in interactions with the local community	1	1.1
Being helpful to cooperating agencies	1.1	1.3
Staying in their lane and not over-stepping their delegation of authority	1	1.4
Being accessible to you	1	1.4
Including your agency in the dissemination of vital information during the incident	1.2	1.4
Being sensitive to local community culture and political climate	1.25	1.5
Rapidly identifying key local players they needed to be communicating with during the incident	1.2	1.6
Seeking to understand organizational culture, values, and capacities of your agency	1.2	1.6
Engaging affected jurisdictions in planning and decision making from the beginning	1.3	1.6
Valuing local knowledge and local input	1.2	1.6
Acknowledging cooperation	1	1.6
Clarifying roles and responsibilities	1.2	1.7
Incorporating information about local values at risk (e.g., biological, archeological, cultural, recreational) into the management of the fire	1.3	1.8
Valuing your agency's input	1.2	1.8
Sharing credit with your agency	1	1.9
Using the incident as a training opportunity to build local capacity	1.2	1.9
Getting your agency information you needed to be effective	1.2	2.1



## 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 Eagle Fire 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 Eagle Fire**



Inciweb, personnel from the Okanogan-Wenatchee National Forest, the Ada County Sheriff, the National Weather Service, and several engaged but unofficial fire watchers tweeted information about the Eagle Fire. Much of the content stemmed from retweets of Inciweb updates. When compared to the 21 incident average, respondents from the Eagle Fire had slightly more knowledge of Twitter, a nearly equivalent percentage of subscribers to Twitter, and were more likely to find Twitter helpful. These findings indicate a trend but are not conclusive due to lower response rates in this section of our survey.

### KEY FINDINGS

- Eagle Fire respondents were more aware of Twitter information resources than respondents across other incidents
- Eagle Fire respondents subscribed to Twitter information feeds with about the same frequency as respondents across other incidents
- Eagle Fire respondents found Twitter information sources more helpful than respondents across other incidents

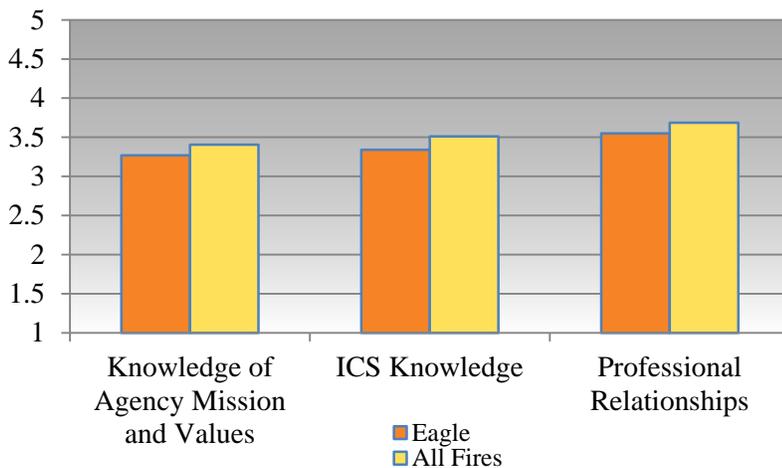
## Moving Forward: Incident learning and capacity building

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
- Eagle Fire respondents reported slightly lower scores than regional averages in all three areas, but scores were still within a positive range in all areas
- For the Eagle Fire, the greatest impact was on professional relationships

**Figure 3. Incident Learning and Capacity Building from the Eagle Fire**



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 included familiarity with ICS, opportunities to gain additional training in an area of incident response, and understanding how to work with an IMT, including what the IMT can and cannot do to assist your county during an incident.

On the Eagle Fire, all responses varied between “no change” and “somewhat better” for knowledge of agency missions and values, ICS knowledge, and professional relationships. While improvements in these areas were slightly lower for Eagle Fire than across all fires, respondents scores remained in the positive range. Breakdowns of these scores and the questions asked are in Appendix B.

## APPENDIX A. Network Performance: Eagle Fire

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	Eagle Fire Average Level of Agreement (1-5)
<b>Coordination &amp; Fire Response</b>		
A coordinated set of fire management objectives were agreed upon among all affected jurisdictions	4.29	4.35
All concerned jurisdictions prioritized maintaining good communication across agencies	4.21	4.35
Credit for success and effort was shared among agencies during public meetings and media events	4.37	4.86
There was a general willingness across agencies to offer assistance to other agencies or jurisdictions	4.48	4.42
“Borrowed resources” were released in a timely fashion to minimize burden on the lending agency	4.38	4.83
Community values at risk from wildfire were readily identified	4.64	4.68
Efforts to protect community values were appropriate given available resources and risks to firefighter safety	4.59	4.89
The overall strategy taken in managing this fire was appropriate	4.40	4.72
Local resources were incorporated into the incident management operations	4.50	4.83
<b>Evacuation Performance</b>		
Cooperating agencies were able to use existing evacuation plans to quickly establish a coordinated evacuation strategy	3.82	4.53
Residents received timely notification of evacuation status using clear, pre-established language to distinguish between an evacuation warning and an evacuation notice	4.03	4.13
Evacuations were executed in a timely and orderly fashion	4.15	4.56
Cooperating agencies had a prepared plan for how re-entry into evacuated areas would be coordinated	4.05	4.54
Trigger points for when evacuated areas would be opened for re-entry were clearly communicated to the public	3.88	4.00
Re-entry was carried out in an organized and orderly fashion	4.15	4.62
<b>Sheltering &amp; Mass Care</b>		
Adequate sheltering options were prepared to house evacuees	4.16	4.33
Sheltering options were clearly communicated to evacuees	4.01	4.29
Donations for evacuees were well-coordinated	3.74	3.75
Auxiliary care needs of evacuees (e.g., food, water, clothing, transportation, spiritual or mental health assistance) were adequately provided for	4.05	3.89
Adequate sheltering options were made available to evacuate pets and livestock	3.88	3.60
<b>Cost Share Performance</b>		
We used pre-agreed frameworks/principles to expedite cost share agreements	3.80	4.40
The process through which cost share was decided upon was fair	3.86	4.00
The resulting cost share agreement was fair	3.96	3.50

**APPENDIX A. Network Performance: Eagle Fire (continued)**

<b>Areas of Network Performance</b>	<b>22 Incident Average Level of Agreement (1-5)</b>	<b>Eagle Fire Average Level of Agreement (1-5)</b>
<b>Public Information Performance</b>		
Public information was coordinated among cooperating agencies to ensure continuity of the message	4.35	4.56
Local resources were leveraged to ensure timely dissemination of public information	4.32	4.73
Social media was used effectively to provide timely public updates concerning the status of the fire	4.16	4.31
A system for communication with the media was put in place to ensure timely dissemination of public information	4.42	4.94
<b>Road Closure Performance</b>		
All cooperating and fire management agencies maintained a timely awareness of the status of road closures	4.25	4.72
Trigger points for making decisions about road closures were proactively communicated to the local community	4.05	4.12
A consistent message was provided to the public about the status of road closures	4.11	4.35

## APPENDIX B. Incident Learning and Capacity Building: Eagle Fire

Areas of Incident Learning and Capacity Building	22 Incident Average Reported Impact (1-5)	Eagle Fire Reported Impact (1-5)
<b>Knowledge of Agency Mission &amp; Values</b>		
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	3.31
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	3.21
<b>Knowledge of ICS</b>		
Your understanding of what an incident management team can and cannot do to assist your county during an incident	3.44	3.15
Your familiarity with Incident Command Systems	3.48	3.21
Your knowledge of how to work effectively with an incident management team	3.67	3.7
Opportunities for you to gain additional training in an area of incident response	3.45	3.50
<b>Professional Relationships and Networks</b>		
The strength of working relationships within your county	3.76	3.60
The strength of working relationships between your county the local National Forest District	3.60	3.33
The strength of working relationships with National Forest Headquarters	3.42	3.23
Your knowledge of the capabilities and constraints of cooperating agencies in your area	3.73	3.57
Your knowledge of the capabilities and constraints of the local National Forest	3.58	3.4
Your professional networks with leaders of cooperating agencies in your area	3.89	3.77
Your knowledge of your local community	3.72	3.62

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