

2014

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

GREEN RIDGE 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 Green Ridge 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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Green Ridge Fire: Incident Report

Study Background

This report summarizes findings on incident response outcomes for the Green Ridge Fire that occurred in 2013. The report presents outcomes of the Green Ridge 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 I/Type II 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 21 surveys were completed for the Green Ridge Fire (81 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 Green Ridge Fire

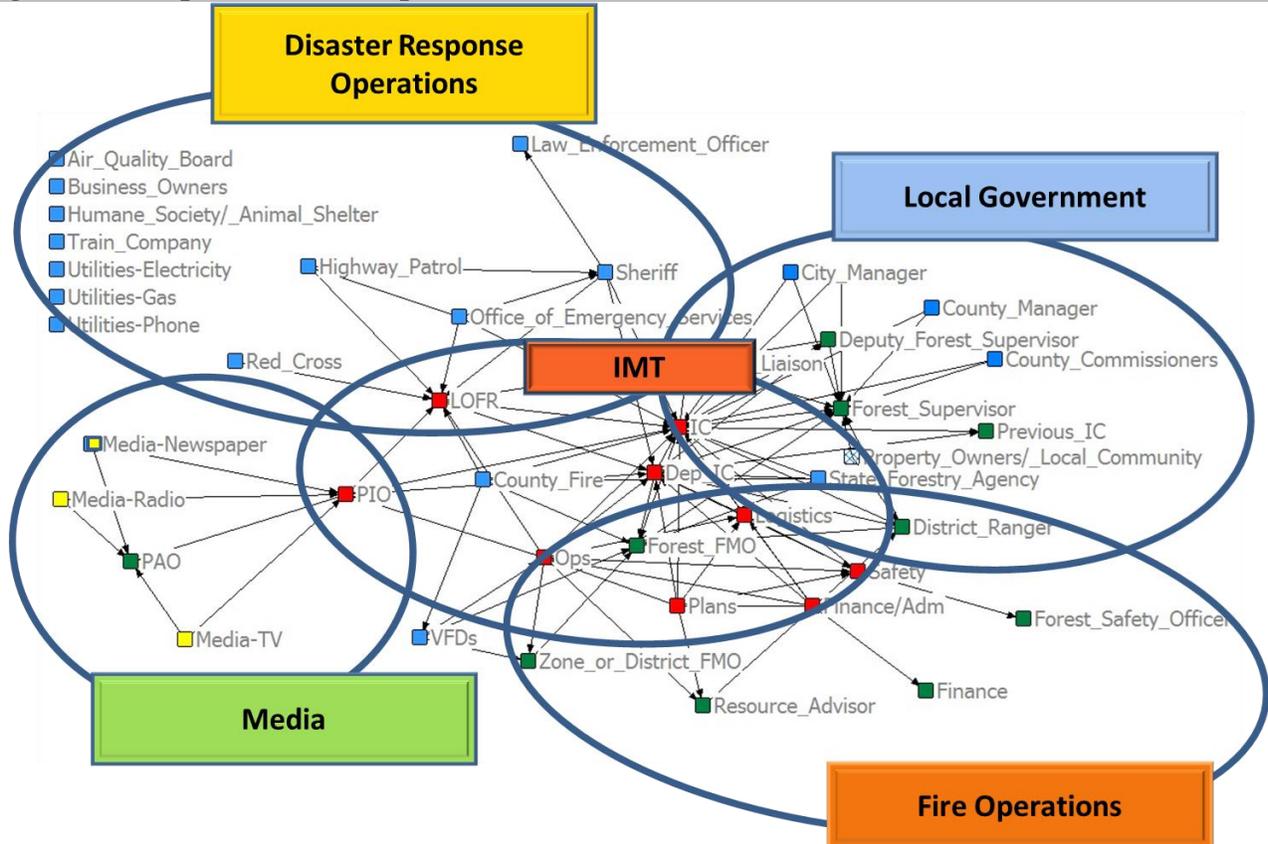
Lightning struck the Deschutes National Forest 14 miles northwest of Sisters, Oregon on the night of July 31st, starting the Green Ridge Fire. Moyer's Type III Incident Management Team was called in until August 3rd, when Minton's Type II IMT was called in. Initially, the fire only affected Deschutes County, but as it spread, Jefferson County became involved. Cooperators included Jefferson County Sheriff and Office of Emergency Management, Sisters-Camp Sherman Rural Fire Protection District, and the Oregon Department of Forestry, among other agencies. Structures in the community of Camp Sherman experienced some threat along with values at risk in the Metolius Research Natural Area and private timber and grazing land. The Green Ridge Fire burned in areas that included ponderosa pine, white fir, Douglas fir, manzanita, and ceanothus, according to Inciweb. On August 12th, Moyer's Type III Team returned to the fire and the following day closures were lifted on Forest Road 14, the East Metolius Trail, several campgrounds, and the Wizard Falls Fish Hatchery. According to Inciweb, by the fire's end, approximately 1,500 acres had burned.

Incident Response Network Performance: Green Ridge 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 and 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 Green Ridge Fire?

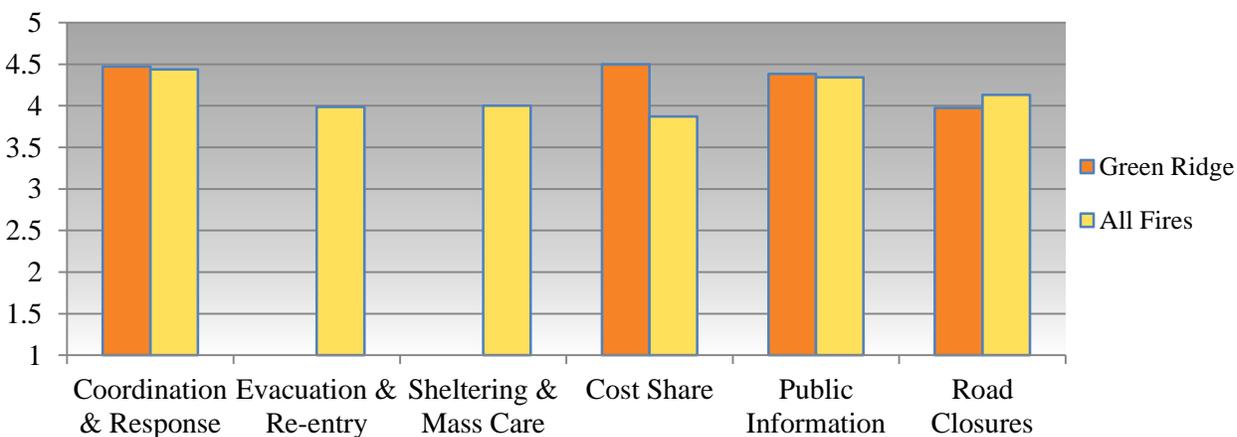
Figure 1 shows network performance ratings for the Green Ridge Fire in comparison with the average across all twenty-two fires in our sample. Green Ridge Fire network performance was higher than average for cost share. In particular, respondents mentioned success in maintaining good communication across agencies and in all three areas related to cost share (using pre-agreed frameworks successfully, using a fair decision process, and developing a fair cost share agreement). Network performance for the Green Ridge Fire was slightly higher than average for the areas of coordination and fire response and public information.

Green Ridge Fire network performance was slightly lower than average and showed the most room for improvement in the area of road closures. Specifically, respondents reported the most room for improvement in proactively communicating trigger points for road closure decisions to the local community. It is important to note however, that closures were primarily on Forest Service roads. According to respondents, there was no evacuation and re-entry or sheltering and mass care on the Green Ridge Fire, so we do not have data on these network performance indicators for this incident.

KEY FINDINGS

- Coordination and fire response, cost share, and public information, were areas of particular success on the Green Ridge Fire
- While road closures occurred mostly on Forest Service roads, respondents reported room for improvement in proactively communicating trigger points

Figure 1. Average Network Performance by Activity: Green Ridge 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 Green Ridge 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.”

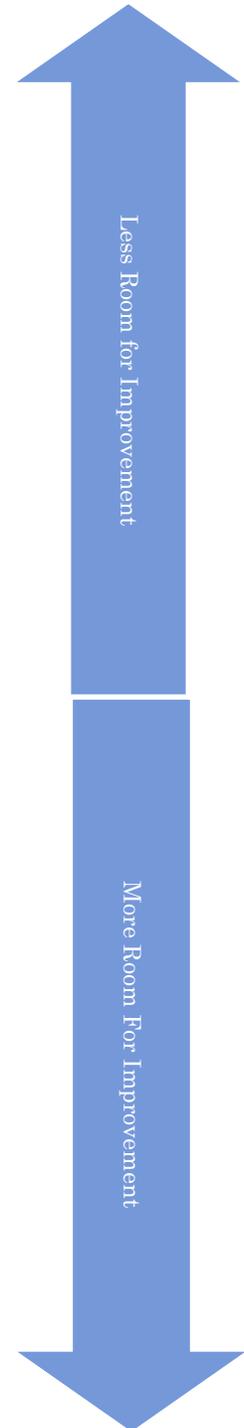
KEY FINDINGS

- On average, Minton’s Type II IMT was rated higher than the regional average in 7 out of 19 areas during the Green Ridge Fire
- IMT strengths:
 - being accessible to cooperators
 - staying in lane and not over-stepping delegation of authority
 - being helpful to cooperating agencies
 - using the incident as a training opportunity to build local capacity
- Areas the IMT may want to continue to focus on for improvement include:
 - obtaining local context information to inform operations
 - incorporating information about local values at risk into the management of the fire

Average responses for Minton’s Type II IMT on the Green Ridge Fire ranged from 0.8 to 1.6, indicating a range from “a little” to “some” room for improvement. The team was rated more positively than the regional average in 7 of 19 areas during the Green Ridge Fire. On average, Minton’s Type II IMT was rated most positively in terms of being accessible to local agencies and staying in their lane, not over-stepping the delegation of authority, being helpful to cooperating agencies and using the incident as a training opportunity to build local capacity. Respondents reported relatively greater room for improvement in obtaining local context information to inform operations and incorporating information about local values at risk into the management of the fire. Greatest strengths and areas for improvement for the incident management team on the Green Ridge Fire are highlighted in the IMT Key Findings box above.

TABLE 1. Green Ridge Incident Management Team Room for Improvement

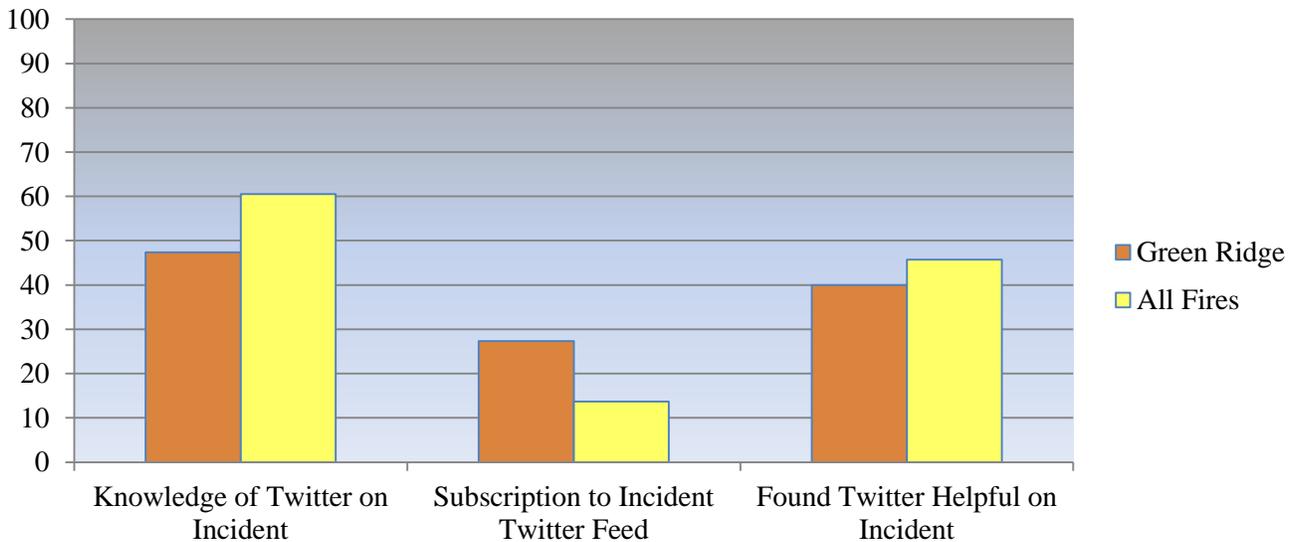
Area for improvement in working with Host Unit(s) and local cooperators	22 Incident Average Room for Improvement (0-4)	Green Ridge Average Room for Improvement (0-4)
Being accessible to you	1	0.8
Staying in their lane and not over-stepping their delegation of authority	1	0.8
Being helpful to cooperating agencies	1.1	0.9
Using the incident as a training opportunity to build local capacity	1.2	0.9
Including your agency in the dissemination of vital information during the incident	1.2	1
Valuing your agency’s input	1.2	1
Rapidly identifying key local players they needed to be communicating with during the incident	1.2	1.1
Serving as a positive ambassador in interactions with the local community	1	1.1
Sharing credit with your agency	1	1.1
Acknowledging cooperation	1	1.1
Being sensitive to local community culture and political climate	1.25	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
Engaging affected jurisdictions in planning and decision making from the beginning	1.3	1.3
Getting your agency information you needed to be effective	1.2	1.3
Being flexible in adapting their fire management strategy to account for local preferences	1.2	1.3
Valuing local knowledge and local input	1.2	1.3
Incorporating information about local values at risk (e.g., biological, archeological, cultural, recreational) into the management of the fire	1.3	1.5
Obtaining local context (e.g., burn scars, trail systems, local weather patterns) to inform their operations	1.3	1.6



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 Green Ridge 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 Green Ridge Fire



Inciweb, personnel from Deschutes National Forest, the National Weather Service, the Northern California Type I IMT, and engaged but unofficial firewatchers all tweeted information about the Green Ridge Fire. Much of the Twitter activity on the Green Ridge Fire was comprised of retweeted Inciweb updates. When compared to the 21 incident average, respondents from the Green Ridge Fire had less knowledge of Twitter, a higher percentage of subscribers to incident-based Twitter feeds, and were less likely to find Twitter helpful.

KEY FINDINGS

- Green Ridge Fire respondents were less aware of Twitter information resources than respondents across other incidents
- Green Ridge Fire respondents subscribed to Twitter information feeds with greater frequency than respondents across other incidents
- Green Ridge Fire respondents did not find Twitter information sources as helpful as did respondents across other incidents

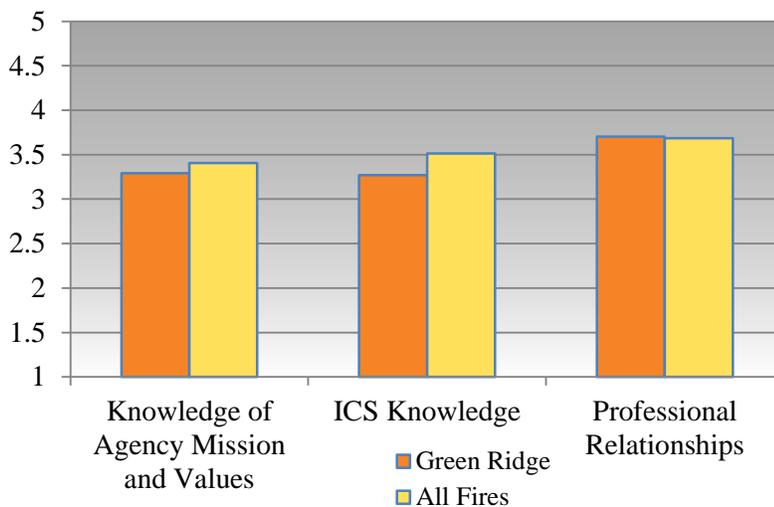
Moving Forward: Incident learning and capacity building

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
- For the Green Ridge Fire, the greatest impact was on professional relationships, specifically in terms of understanding capabilities and constraints of the National Forest

Figure 3. Incident Learning and Capacity Building from the Green Ridge Fire



Across all 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 what the IMT can and cannot do to assist your county during an incident.

On the Green Ridge Fire, responses varied between "no change" and "somewhat better" for knowledge of agency missions and values, ICS knowledge, and professional relationships. Respondents reported the single greatest improvement within professional relationships and networks, specifically in their knowledge of capabilities and constraints of the National Forest.

APPENDIX A. Network Performance: Green Ridge Fire

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	Green Ridge Fire 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	4.40
All concerned jurisdictions prioritized maintaining good communication across agencies	4.21	4.75
Credit for success and effort was shared among agencies during public meetings and media events	4.37	4.50
There was a general willingness across agencies to offer assistance to other agencies or jurisdictions	4.48	4.67
“Borrowed resources” were released in a timely fashion to minimize burden on the lending agency	4.38	4.57
Community values at risk from wildfire were readily identified	4.64	4.72
Efforts to protect community values were appropriate given available resources and risks to firefighter safety	4.59	4.35
The overall strategy taken in managing this fire was appropriate	4.40	4.28
Local resources were incorporated into the incident management operations	4.50	4.29
Evacuation Performance		
Cooperating agencies were able to use existing evacuation plans to quickly establish a coordinated evacuation strategy	3.82	NA
Residents received timely notification of evacuation status using clear, pre-established language to distinguish between an evacuation warning and an evacuation notice	4.03	NA
Evacuations were executed in a timely and orderly fashion	4.15	NA
Cooperating agencies had a prepared plan for how re-entry into evacuated areas would be coordinated	4.05	NA
Trigger points for when evacuated areas would be opened for re-entry were clearly communicated to the public	3.88	NA
Re-entry was carried out in an organized and orderly fashion	4.15	NA
Sheltering & Mass Care		
Adequate sheltering options were prepared to house evacuees	4.16	NA
Sheltering options were clearly communicated to evacuees	4.01	NA
Donations for evacuees were well-coordinated	3.74	NA
Auxiliary care needs of evacuees (e.g., food, water, clothing, transportation, spiritual or mental health assistance) were adequately provided for	4.05	NA
Adequate sheltering options were made available to evacuate pets and livestock	3.88	NA
Cost Share Performance		
We used pre-agreed frameworks/principles to expedite cost share agreements	3.80	4.50
The process through which cost share was decided upon was fair	3.86	4.50
The resulting cost share agreement was fair	3.96	4.50

APPENDIX A. Network Performance: Green Ridge Fire (continued)

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	Green Ridge Fire Average Level of Agreement (1-5)
Public Information Performance		
Public information was coordinated among cooperating agencies to ensure continuity of the message	4.35	4.18
Local resources were leveraged to ensure timely dissemination of public information	4.32	4.31
Social media was used effectively to provide timely public updates concerning the status of the fire	4.16	4.36
A system for communication with the media was put in place to ensure timely dissemination of public information	4.42	4.54
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	3.86
A consistent message was provided to the public about the status of road closures	4.11	3.93

APPENDIX B. Incident Learning and Capacity Building: Green Ridge Fire

Areas of Incident Learning and Capacity Building	22 Incident Average Reported Impact (1-5)	Green Ridge Fire 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	3.25
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	3.33
Knowledge of ICS		
Your understanding of what an incident management team can and cannot do to assist your county during an incident	3.44	3.33
Your familiarity with Incident Command Systems	3.48	3.15
Your knowledge of how to work effectively with an incident management team	3.67	3.38
Opportunities for you to gain additional training in an area of incident response	3.45	3.23
Professional Relationships and Networks		
The strength of working relationships within your county	3.76	4.00
The strength of working relationships between your county the local National Forest District	3.60	3.90
The strength of working relationships with National Forest Headquarters	3.42	3.80
Your knowledge of the capabilities and constraints of cooperating agencies in your area	3.73	3.55
Your knowledge of the capabilities and constraints of the local National Forest	3.58	4.00
Your professional networks with leaders of cooperating agencies in your area	3.89	3.77
Your knowledge of your local community	3.72	3.42

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